



33, TOTHILL STREET, WESTMINSTER, LONDON, S.W.1.

Telephone: WHitehall 9233 (12 lines). Telegrams: "Trazette, Parl, London".
BRANCH OFFICES

GLASGOW: 87, Union Street Central 4646
 NEWCASTLE-ON-TYNE: 21, Mosley Street Newcastle-on-Tyne 22239
 MANCHESTER: Century House, St. Peter's Square Central 3101
 BIRMINGHAM: 90, Hagley Road, Edgbaston Edgbaston 2466
 LEEDS: 70, Albion Street Leeds 27174
 BRISTOL: 8, Upper Berkeley Place, Clifton Bristol 21930

Annually £4 10s. by post. Single copies, Two shillings.
 Registered at the G.P.O. as a newspaper. Entered as second-class matter in U.S.A.

Vol. 99] FRIDAY, SEPTEMBER 4, 1953 [No. 10

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Equity in Staff Changes

THE imminence of many staff changes consequent on the abolition of the Railway Executive at the end of this month has led inevitably to much uncertainty and to fears as to their personal future among those likely to be affected. Whatever care may be taken by those responsible and whatever consideration shown for the personal interests and preferences of the staff, upheavals of this kind are bound to cause disappointment and inconvenience to some. This aspect of the railway staff problem is greater on this occasion than it was six years ago on formation under the Transport Act, 1947, of the British Transport Commission and Railway and other Executives. Then it was a question of finding the right men among the staffs of the four main-line railways to fill new posts. In many cases those selected received promotion in some form or were given better prospects, and few railwaymen appointed to the staff of the Railway Executive headquarters or the British Transport Commission lost through their transfers. Now, however, whatever form the interim organisation may take which replaces the Railway Executive, a number of officers and other railway servants on the staff of the Executive and perhaps also of the Commission will have to be fitted into British Railway staffs in

the Regions or in the new Commission organisation. Their case demands and will receive the utmost sympathy and understanding. The claim of these men for consideration is just as great as that of those who remained in the Regions. In many cases they did not wish to be transferred to the Commission or Executive, but loyally accepted instructions in the railway tradition. Their case has been borne in mind in the last few months during which senior staff appointments in the Executive headquarters and Regions have been on an acting basis; if this seems to have led to uncertainty it must be remembered that to have made some appointments acting and others not, would have been highly invidious.

Lord Hurcomb's Farewell Message

SOBER optimism as to the future of nationalised transport with emphasis that much has been achieved since nationalisation in 1948, besides his thanks for the loyalty and goodwill of his colleagues and the staffs in all sections of the undertaking is the substance of the farewell message of Lord Hurcomb, who retired last Monday from the chairmanship of the British Transport Commission. The text of his message is given on another page. He points out the progress in making good during the six years of his tenure of office the war damage and arrears of maintenance from which all branches of transport, and not least British Railways, were suffering in 1947; he might have added that if the rehabilitation and development of the railways during this period were, as they remain, slower than they might have been, this is largely because of Treasury restrictions on capital development, of material shortages, and other factors beyond the control of the senior railway officers concerned. As to the future, Lord Hurcomb states that much remains to be done, and he reiterates his conviction that whatever form the nationalised transport undertakings may assume, efficient service at the lowest real cost to the national economy must continue the aim of those engaged in serving them.

Main-Line Electrics on Test in Victoria

TESTS of the first of the Victorian Railways "L" class main-line electric locomotives being built by the English Electric Co. Ltd. have shown their remarkable power and speed. As electrification of the Gippsland line, for which they are intended, is not complete, the tests have been restricted mainly to suburban lines, but the results have indicated the savings in times that the locomotives can achieve. One locomotive hauling 580 tons was running at 38 m.p.h. at the bottom of the 1 in 50 Glenroy Bank and at the top of the bank its speed had only fallen to 33 m.p.h. An "S" class steam locomotive hauling the "Spirit of Progress" express between Melbourne and Albury, with a similar tonnage, normally attains 50 m.p.h. at the bottom of the bank, but its speed falls to 15 m.p.h. by the summit. Another electric locomotive, with a load of 608 tons from a standing start at the foot of the bank, accelerated to 30 m.p.h. before reaching the top; returning, it held a load of 1,000 tons at 32 m.p.h. on the downgrade solely with its powerful dynamic brakes. The speed of the locomotives allows goods trains to be hauled through the suburban area without delaying passenger trains. For instance, the running time from Dandenong to Oakleigh for an "X" class steam locomotive hauling 1,100 tons is 35 minutes; an "L" class with the same load takes only 18 minutes.

Record Breaking by Victorian Railways Diesels

THE Victorian Railways fleet of main-line diesel-electric locomotives continues to set new standards. No. B.72, of the 26 1,500-h.p. Clyde-General Motors locomotives, recently established a new ruling gradient load performance by taking 1,016 tons from Benalla to Albury, the heaviest load ever hauled by a single locomotive over this section of the North Eastern line. The large mileages registered by the diesels prove their high rate of avail-

ability and dependability. For example, No. B.60, *Harold W. Clapp*, the first of the fleet, which celebrated its first birthday in July, has run at least 166,000 miles. No. B.63, which went into service on October 7 last, is expected by the time it has completed twelve months' running, to have covered 180,000 miles. Five of these diesels have now exceeded 100,000 miles. In June the combined figure for all diesels passed 1,000,000 miles, an outstanding performance. One of the assignments of these locomotives is hauling the "Overland" between Melbourne and the South Australian border; their rapid acceleration and ability to maintain speed uphill has enabled this train to be accelerated by $1\frac{1}{4}$ hr. in one direction without exceeding the 60 m.p.h. maximum to which this train is kept.

Overseas Railway Traffics

BARSI Light Railway receipts for July at Rs. 13 to the £ were £50,000, an increase of some £5,000 compared with last year. The total for the four months since April 1 is £137,000, a decrease of over £5,000 against the corresponding period of 1952. International Railways of Central America railway operating revenues for June were \$1,205,181, a rise of \$195,574 over June of last year. The aggregate for the first six months of this year was \$8,176,804, compared with \$6,974,638 for January to June, 1952. The corresponding figures for net revenue from railway operations are \$1,573,544 and \$1,303,003, and those for net income \$804,173 and \$635,178. Midland Railway of Western Australia railway and road service receipts for June are estimated at £A.50,321, a decrease of £A.2,645 against last year. Aggregate receipts from July 1, 1952, were £A.657,197, which also is a decrease of £A.40,047 compared with 1951-52. Taltal Railway traffic receipts for July were pesos 3,220,000, an increase of pesos 960,000 against July of last year.

Loan for South African Railways

THE International Bank in Washington has made two loans to South Africa, each of \$30,000,000. One is for railway expansion and is intended to enable the Government to meet part of the cost of locomotives, rolling stock and rails to be imported, mostly from Britain, between now and 1955. In 1951 the bank lent to South Africa \$50,000,000, of which \$20,000,000 was for the expansion of railway and harbour facilities; this has been almost completely taken up. The new railway loan carries interest at $4\frac{1}{4}$ per cent and is for a term of ten years with repayment beginning on November 15, 1955. The size of the loan indicates the amount of capital for transport needed to meet the incessant growth of industry and the new mining operations in the Orange Free State and to make possible a considerable increase in the tonnage handled during the next few years. Some of the works which are being carried out to meet the requirements of industry and agriculture in the Orange Free State were referred to editorially in our June 26 issue.

Canadian Pacific Earnings Reduced

EARNINGS of the Canadian Pacific Railway are falling behind forecasts so much that the company's maintenance programme for this year will have to be curtailed. In making this announcement Mr. N. R. Crump, Vice-President of the C.P.R., has said that railway revenue so far has not reached expectations. The outlook for the full year 1953 is such that earnings may be substantially lower than the estimate made last January. In the circumstances the company must defer part of the maintenance work which would normally be undertaken. It has not yet said where the retrenchment will be made, but it is safe to say that nothing will happen to jeopardise, for instance, the high standard of track maintenance and passenger facilities on which the Canadian Pacific justly prides itself. The net operating revenue for the first six months of this year was \$10,507,352, compared with \$11,138,101 in the corresponding period last year. Although it was \$260,000 up in July, this may be the

fortuitous result of a strike in the road transport industry which diverted traffic to rail. It is paradoxical that a time when Canadian industry is expanding at an unparalleled rate the C.P.R., which was one of the main agencies to unite Canada, should be denied its full share of this expansion by soaring working expenses which seriously offset increasing revenue.

New Stock for Mersey and Wirral Lines

AN interesting undertaking associated with the provision of new stock for the L.M.R. Mersey-Wirral lines, details of which were given last week, is the conversion of the Mersey Railway section from the third- and fourth-rail to the third-rail system. The Mersey was not only the first example of a steam-worked railway being electrified in this country, but the first to use an insulated return, ante-dating by a year the Great Northern & City installation of conductor rails outside the running rails. The Wirral lines were electrified in 1938 on the third-rail system, and the new stock for through services then supplied had to be equipped with an earthing contactor for connecting the negative to the running rails on the Wirral section. A track magnet at Birkenhead Park, the junction of the Mersey and Wirral lines, operates an earthing contactor which connects the negative side of the train equipment to the negative rail and disconnects it from the running rail. The 650-V. d.c. electrification already in existence for 55 years on the Mersey Railway when the Wirral lines were converted made it necessary to adopt the same system for the latter, through running being so important a feature of the new facilities. In 1932, however, the Railways (Standardisation of Electrification) Order had confirmed the 1927 Railway Electrification Committee recommendation of 750 V. for third-rail systems and 1,500 V. for overhead.

Modernising New York Transport

IF the rolling stock replacement programme advocated by Colonel S. H. Bingham, Chairman of the New York Board of Transportation, is carried out, manufacturers should be assured of substantial orders during the next few years. He estimates that even if New York underground cars are not withdrawn until they become 50 years old, 651 cars will be needed in replacement within ten years, besides 370 more for new extensions. However, he considers 40 years to be a more reasonable lifetime—in this case the Board would have to order in all some 3,400 new cars—and recently told an audience of New York engineers that usual London Transport practice was to replace its underground stock after 30 years. On a 40-year replacement basis the Board would have to spend over \$30,000,000 on new rolling stock; in addition it is committed to costly new works, as we indicate on another page. The power supply urgently needs to be modernised and engineering consultants have put the cost of renewal at \$325,000,000 spread over ten years. Fortunately the system was carrying its great daily passenger load in safety, said Colonel Bingham, and while things kept running reasonably well there was a tendency to put off expenditure for modernisation, but it could not be deferred for ever, and the question was whether New York could not afford to spend those large sums.

Animals in Transit

THE care and wellbeing of animals in transit has long been a point for discussion, particularly so when they are transported for long distances by rail. British Railways, with the co-operation of the R.S.P.C.A. and the Universities Federation of Animal Welfare, have issued a handbook to their 50,000-odd employees who handle livestock transported by rail. The front cover bears the appropriate words "Customers Can Complain: Cattle Can't." The booklet is thorough in its information; the compilation of instructions and diagrams covering such diverse procedures as the milking of cows to the handling of dogs is worthy of comment. Particularly noteworthy is the emphasis laid upon the isolation of T.T. attested cattle

and their feeding utensils. Unnecessary discomfort and risk to life are stressed in advice to drivers, guards and shunters; the compulsory use of wagon sheetings is explained and it is urged that gentle, rather than harsh treatment will provide more response when loading animals. The men who handle animals in transit are continually in the public eye, whether their conduct be praiseworthy or otherwise; some useful hints are given in the booklet on the proper attitude to be adopted by railwaymen in these matters. The new publication is not merely a plea for humanitarian treatment; it is an instructional manual, based upon first class veterinary knowledge.

Discipline in the Signalbox

THE proceedings at the inquest following the recent accident at Manchester and the Railway Executive official statement prompted by them, given elsewhere in this issue, naturally has caused much comment. Safety of train operation does not depend merely on installing a good signal system; it must be ensured and maintained by well-trained men who can be relied on to fulfil all their duties. The most conscientious man can make an honest mistake, a risk that must always be present; but a disconcerting feature of several accidents of the last few years has been the failure of signalmen to apply simple rules, the purpose of which should have been obvious to them, and on occasions the lapse of any real sense of responsibility has been painfully obvious. Difficulty in recruiting the right kind of man may well be one cause, and there may be others, such as effective supervision, which also is largely a matter of manpower. In such circumstances the high standard rightly expected of and usually attained by British railwaymen is all the harder to achieve. It is reassuring that the matter is being vigorously pursued at Executive level and in the Regions.

June-July Operating Results

AT first sight No. 7 of *Transport Statistics*, covering the four weeks from June 15 to July 12, appears to report satisfactory results for British Railways. An originating freight traffic of 22,201,000 tons was an advance of 514,000 tons, or 2·4 per cent, on 1952 and a record for the seventh period in any year since nationalisation. Another record for these four weeks was the working of 1,742,390,000 ton-miles, 59,078,000 (3·5 per cent) above 1952. A close examination shows that the upward turn represents largely a recovery from the setback to industrial output and rail carryings caused by the Coronation celebrations. The combined tonnage for Periods 6 and 7 of this year was 232,000 tons below the corresponding eight weeks of 1952 and no less than 1,230,000 tons (2·8 per cent) below 1951, when British Railways carried 1,014,000 more tons of merchandise, 448,000 more tons of coal and coke, but 232,000 fewer tons of minerals. The combined ton-mileage of the 6th and 7th periods was 8,000,000 below 1952 and 213,000,000 (6 per cent) below 1951.

The casual nature of this year's June-July figures is confirmed by the poor freight receipts for the next four weeks to August 9, which were only 0·8 per cent above 1952, notwithstanding the 5 per cent increase in charges from December last; coal and coke receipts were surprisingly 2·2 per cent lower. Mineral traffic has been heavy this year, because the steel industry had an average weekly output of 338,100 tons from January to July, against 303,000 last year—an increase of about 11 per cent. Unfortunately for British Railways, the example of the steelmakers was not followed by the coal mining industry, which produced only 134,517,200 tons of coal in the first 32 weeks of the year, compared with 136,678,800 tons in 1952. The persistent decline in merchandise was reduced to 63,000 tons (1·6 per cent) in the four weeks to July 12, representing a decreased forwarding of 30,000 lightly loaded wagons. As the average length of haul was nearly four miles longer, merchandise ton-miles were above the 1952 level but well below 1951. One main reason for the

loss of high-rated railway traffic is the increase in "C" licences, authorising traders to carry their own goods over any distance in their own vehicles. The number of these licences rose by 75 per cent from 487,150 in December, 1947, to 853,580 in June, 1953. Of this large privately-owned motor fleet, some 55,000 are heavy vehicles, which are multiplying on the highways at the rate of over 3,000 a year and are potential substitutes for railway wagons.

RAILWAY OPERATING STATISTICS

In the four weeks to July 12, loaded freight train-miles were cut by 47,000 (0·5 per cent), but 72,000 more empty train-miles were run (5·6 per cent), bringing the total train mileage of 10,814,000 above last year by 0·2 per cent. The Eastern Region had an exceptionally large increase of 52,000 in empty train miles (25·3 per cent); it worked 26,328,000 empty wagon miles, an increase of 1,377,000 (5·5 per cent) and 46,287,000 loaded wagon miles, 1,089,000 more than last year (2·4 per cent). The Eastern Region percentage of loaded wagon miles to total was 63·7, compared with percentages of 71·1 for the whole line and 76·5 for the Western Region. From the beginning of the year the Eastern Region has experienced a sharp fall in loaded merchandise wagon miles and a rise in loaded coal wagon miles, involving much empty haulage back to the pits. In these conditions it did well to attain a freight train speed of 9·18 m.p.h., while the North Eastern registered 11·26 m.p.h., the all-line average was 8·99 m.p.h. and the Western Region's speed dropped to 8·78.

Freight train engine-hours in traffic were 17,000 higher than in 1952, a rise of 1·5 per cent. The Western Region accounted for the bulk of the increase—11,000 hours, an advance of 5·1 per cent—and thus reduced the number of wagon miles it worked in a train engine hour from 224 to 215, the lowest figure for any Region and 21 wagon miles below the all-line average. Similarly the Western Region had a poor output of net ton-miles per train engine hour. Measured by this gauge, its productivity was 1,144, compared with 1,175 in the London Midland Region, 1,313 in the Eastern and 1,505 in the North Eastern. Mobility on the eastern side of the country raised the all-line output of train operation to a peak of 1,190 not reached previously by British Railways in any 4-week period.

The summer passenger services came into full force during the period we are reviewing. They required the running of 455,000 additional steam coaching train miles (3 per cent) and 51,000 more electric train miles (1·3 per cent). The average speed for all steam trains was 14·95 m.p.h., while the electric trains ran at 20·18 m.p.h. These figures represent fresh records for both forms of traction since nationalisation.

ROAD TRANSPORT

In Period 7 British Road Services carried 3,117,000 tons, a decrease of 107,000 tons (3·3 per cent). Vehicle miles were curtailed by 915,000 (1·6 per cent).

Road passenger transport conveyed 189,995,000 passengers, a decrease of 1,589,000 (0·8 per cent). The lost business was divided almost proportionately between the Tilling and Scottish Groups, but the English undertaking saved only 11,000 car miles out of 32,860,000 against an economy of 40,000 in Scotland on a total of about 16,000,000 car miles.

LONDON TRANSPORT

In the four weeks to July 12 London Transport carried 334,078,000 people by rail and road, 2,478,000 more than in 1952 (0·7 per cent). The average receipt per journey was less by a fraction of a penny, but that sufficed to reduce total revenue by about 2 per cent. London Transport railways booked 44,439,000 passengers, an increase of 1,976,000 (4·7 per cent) and saved 277,000 car miles (1·6 per cent). Road vehicles carried 289,639,000 passengers, an increase of 502,000 (0·1 per cent), while running 119,000 fewer miles (0·3 per cent). Evidently efforts were made to effect operating economies, but takings were down again by about 2 per cent in the four weeks to August 9, proving that some revision of fares was inevitable.

Joint Consultation in Practice

THE existing machinery of negotiation in the railway industry dates from an agreement made between the railway companies and the trade unions in February, 1935; it provides for Local Departmental Committees at stations and depots, Sectional Councils in the Regions, and for joint meetings between railway management and trade unions at the top level, together with the Railway Staff National Council and National Tribunal. This is the means of negotiating on conditions of service and of settling disputes by constitutional methods at all levels; it has proved on the whole sound, and has remained unaltered by the transfer of the railways from company management to a nationalised organisation.

The ordinary railwayman is mainly concerned with contact with the management at local level. According to the agreement, a L.D.C. may negotiate and draw up signed local agreements upon such matters as rostering, times of meal breaks, holiday rotas, safety and labour-saving appliances, improvements in working conditions, and methods intended to retain existing traffic or to secure new traffic. Within these terms of reference the functioning of the machinery at local level seems rather circumscribed, but in practice it need not be so. Whilst signed, formal minutes must be confined to certain subjects and L.D.C.s. may not contract outside national agreements, the wise local official has never debarred discussion of any topic pertinent to the smooth running of a station or depot. In effect, the existing set-up provides for a considerable degree of local self-government. It has proved especially successful where there has been continuity in office on the part of the elected representatives, with a chairman on the management side who does not stand on ceremony and can make decisions without appearing arbitrary. It is a pity that the opportunities afforded by the proper understanding and use of the machinery are not always recognised by one side or the other. And whatever may be the constitutional machinery, much depends upon those informal discussions between individuals of opposing parties, whether in Parliamentary lobbies or in a shed master's office.

The introduction of the principle of joint consultation has greatly widened the scope of L.D.C.s. Matters of general policy outside the realm of negotiation now can be admitted to the agenda for formal discussions. In December, 1949, the Railway Executive issued a circular, signed by the then Chairman, Sir Eustace Missenden, and by representatives of the trade unions, affirming their belief in the consultation procedure, and stating that consultative meetings henceforth could be instigated by either side to discuss policy. The Executive undertook to give some prior indication to the staff of contemplated lines of action, and to give reasons for any decisions reached by the management. Unfortunately, further details of the manner in which the consultation scheme was intended to operate so far do not seem to have been circulated, though the original document indicated that this information would follow. No doubt it has been found hard to define what must be largely a matter of the right spirit at all levels; but, in the absence of further guidance, some misconceptions about joint consultation have grown up. There are allegations that it cuts across the negotiating machinery and the staff suggestions scheme, or that it invites fruitless controversy. It has become the practice to submit schemes of new works or major alterations in working to the consultative procedure.

District officers and other local officials, however, are not always in possession of the facts upon which high-level policy has been determined, and may therefore be unable to explain fully to the staff the reasons for the particular alteration or innovation. The gap between the levels at which policy is formulated and at which it is implemented is often wider than the gap between district level and the ordinary railwayman. How well this gap can be bridged by the coming decentralisation remains to be seen. That the Railway Executive had a genuine desire to implement joint consultation was indicated by

the series of Railway Executive conferences on the subject at Shanklin during last winter. The conferences were attended by some 800 railwaymen of all ranks and grades. No one who heard the frank discussions at that time could well reject the practicability of joint consultation as a means of improving not only staff relations but staff conditions as well.

There is a hankering in certain circles for what is described as "a greater share in the management" of the railways. Just how this is to be implemented, and at what level, does not seem to have been specified. Its advocates have forgotten that those who take decisions must also be responsible for them. The plea for a greater share in control can hardly relate to promotion from the ranks, for the number of managerial posts held by men who have graduated from the wages grades has steadily increased since the first world war, and, by and large, the majority of those who occupy what can be called managerial posts today seem to have risen from the ranks except in certain technical departments.

No other major industry of this country can claim to be organised on more democratic lines than the railways. What is needed is not a new chain of authority, nor a management that is at the mercy of an internal electorate, but a more whole-hearted implementation of the existing means of bargaining and sharing one another's opinions and ideas.

East African Projects and Prospects

THE postwar increase in the volume of traffic on the East African Railways & Harbours is probably unequalled by any other major system in a colonial territory. This expansion has been reflected in a corresponding increase in revenue. In 1952, four years after the formation of the East African Railways & Harbours from the Kenya and Uganda and Tanganyika systems, the ton-mileage of freight traffic rose by more than 55 per cent over the 1948 figure with a total of 1,399,000,000. Total passenger journeys for 1952 numbered 6,433,848 against the 1948 figure of 5,495,353, an increase of 17 per cent. The working of the ports followed a similar trend, the total quantity of cargo handled at the principal ports during 1952 being 4,070,488 tons compared with 3,188,230 tons in 1948, an increase of 28 per cent.

Railway services earnings in 1952 totalled £12,571,111; harbour receipts totalled £2,898,895, a combined total of £15,470,006, showing an increase of 17 per cent over the 1951 figure and 70 per cent over the 1948 figure. Working expenditure for 1952 showed a bigger increase than revenue, totalling £12,160,452, which was a 19 per cent increase over the 1951 figure. This was due to the rise in the cost of labour and materials and an increase in the rate of contributions to the renewals fund.

Record tonnages of traffic were moved by the railway during 1952. Despite operating setbacks caused by serious derailments, the clearance of traffic from Mombasa exceeded the previous highest figure by 9.7 per cent. On the Tanganyika Central line the tonnage of public traffic rose by 17 per cent over the previous year and with an exceptionally heavy cotton and produce crop the volume of exports showed an increase of 31 per cent.

Far-reaching measures have been taken to cope with the rapid increase in traffic; loan funds totalling over £60,000,000 have been authorised, although only some £20,000,000 has been raised. Since the war there have been constant additions to the locomotives, rolling stock, and other plant, supplied by British firms, and much has been done to increase line and port capacity. The latest reports from East Africa, however, state that official policy on the subject of expansion is rather one of caution: apart from the recent political disturbances which have undoubtedly had the effect of lessening the pressure on the transport system, there are signs that expansion of the East African economy is slowing down. A programme of new rolling stock orders is being implemented, involving a total financial outlay of £20,000,000. The locomotive orders, subject to review, include 146 steam locomotives and diesel

shunting engines; a large number of passenger and goods vehicles is also on order.

There are two major railway construction projects in hand, the Western Uganda extension from Kampala to Kasese in the foothills of the Ruwenzori mountains and an extension of the Southern Province Railway in Tanganyika. The first section of the Western Uganda extension from Kampala to Mityana was opened on August 1. Plans for further extension of the principal ports are also in hand.

To sum up, therefore, although the present political troubles in Kenya and failure of crops in parts of Kenya and Tanganyika have caused a drop in railway earnings recently, the setback can be considered only temporary, and even if the economic advance of the territories is resumed at a rather slower tempo than before, the railways' prospects are sound and the administration's policy is realistic and supple enough to meet all contingencies.

Approach Warning or Stop Signal?

OCCASIONALLY after an accident in which signals have been disregarded, there is discussion of the functions of various classes of signal and the possibility of making a change for the better. The Harrow accident has again directed attention to the matter and one of our correspondents has advanced the view, as he has done before, that what we call in Great Britain the distant signal ought to be a stop signal. Signals having the same functions as our present distant signals, but sometimes known by a different name, have been in use in all parts of the world for a long period, occasionally in association with other signals of which there is no exact equivalent in this country. Originally the expression "distant" signal meant simply a signal situated at a distance from the man who operated it and not worked locally on the spot, as all the first signals were. The term had thus no relation to the type of signal or its traffic regulating function; it was a technical one, referring simply to the means by which the signal was actuated. According to the classic paper on signalling read by R. C. Rapier before the Institution of Civil Engineers in 1874, the year of the Royal Commission appointed to inquire into railway accidents and their possible reduction by legislation, the first operation of a signal at a distance in Britain was seen at the Hawick line junction between Berwick and Edinburgh, in 1846.

The protection of trains in stations and at junctions was—apart from their quite separate function of maintaining the time interval between trains—the chief function of the earliest signals and for that the old high semaphores and discs and crossbars were set up and operated from the foot of the post. Every endeavour was made to get as long a range of visibility as possible, with the arms and discs standing out in bold relief against the sky, all the more necessary when hand brakes alone were available and drivers had to sight, read, and begin acting on an adverse signal at a considerable distance in rear. The use of wires to work them enabled the signals protecting a station to be moved out from it instead of standing in the centre of it, as had hitherto been the custom; or enabled additional signals to be provided to reinforce the function of those already there. The significance of the aspects was, however, not necessarily altered thereby.

Had the weather remained always clear and the signals visible for a long way, little difficulty might have been experienced with such arrangements, at least from the safety point of view, but unfortunately such ideal conditions seldom obtained, bad visibility being an all too frequent occurrence. From that arose the need to provide some approach warning of the condition of the signals in advance and enable drivers to act on them satisfactorily without having to see such a long way ahead. The process by which this came about, however, was a somewhat confused one and clear views on the matter did not emerge for some time. Meanwhile high speeds were becoming common and as yet there was no general use of block telegraph working. The protection

of a train stopped on the open line depended solely on those in charge of it going back with hand signals in the minutes made available under the time interval system.

The Great Northern main line, at its opening throughout in 1852, is said by Rapier to have been the first to have semaphore type distant signals at every station. For some time the working of such signals, called by some lines "auxiliaries," followed no uniform or consistent method and in appearance they were no different, if of semaphore pattern, from home or starting signals. The fishtailing of the arms was not seen until 1872 and not officially asked for until 1877. They were, in fact, outer home signals of a special kind, which was necessary before block working became general. They were often workable independently of the other signals, but several drivers, when before the Commissioners of 1874, asked that they be made always to repeat the indications of the "main" signal ahead. In other countries also the need for some signal placed well out from a station was felt as speeds increased. The well-known red disc of the French lines, a "deferred stop" signal, came into existence in that way and continued to fulfil a purpose after block working was adopted, because there such working, on most lines, had permissive features.

Thus the old distant signals were stop signals, a driver being expected to pull up before passing one which was at danger, if he could, and then proceed forward cautiously, prepared to stop again at any point within it. Very often, of course, and certainly in poor weather, he could not be relied on not to overrun the signal to some extent, although in some overseas countries, where there is seldom any difficulty in getting a long clear view at all times, signals of this kind are found today, as in India with the "outer" signal at the "B" class stations, at which a driver is expected to stop without preliminary warning.

As the absolute block telegraph came into general use here, with its provision of a certain overlap before a train was permitted to approach, the attitude towards the working and observance of distant signals underwent a change, for it was found impossible to conduct a busy main line service, not to mention a suburban one, on any other basis. The old rules remained in the rule books of some lines for many years, however, and on the occasion of the fatal accident at Wivelsfield on December 23, 1899, when an express from Brighton ran into the Newhaven boat train, having passed all the Keymer Junction signals in the fog, the Inspecting Officer drew attention to that and said rules which could not be enforced should be amended to conform to the greatly changed conditions, after which wording almost as we know it today, recognising the distant signal as a warning signal, was adopted. Certain lines on the Continent originally had the first signal encountered on approaching a signal box an absolute stop signal, also an inheritance from pre-block days.

If the block working rules, when properly carried out, provide sufficient overlap beyond the first stop signal, wherever located at a station or signalbox, and adequate warning of the condition of that signal is given to drivers, anything more restrictive can only result in a loss of capacity, with a mere problematical increase in safety, something not really justified by circumstances, for some risk in running trains there must be. To make the existing distant signals into stop signals would be the same as creating a great number of outer homes at an excessive distance from the signalbox. This itself would raise new problems—automatic indication and protection of standing trains, and so on—and in our climatic conditions would demand distant warning approach signals in rear, for whatever may be feasible in the clear weather of South America or India, it would be out of the question here to expect a driver, running at any speed, to be ready to stop at a signal without adequate preliminary warning of its condition. What is required is not more restrictive signalling, but obedience to that which already exists, the outcome of long practical experience; but if signals are totally disregarded and treated as if they were non-existent, what certainty is there that some other arrangement would have been more effective?

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Distant Signals

August 18

SIR.—Mr. E. R. B. Roberts in your issue of July 31 states that he never knew a collision occur on the greatest railway in South America where the distant was observed as a stop signal. I would be interested to know whether drivers had any prior indication of the aspect of such signals and whether the same rule applied to all distant signals irrespective of the length of block sections; also whether Westinghouse or vacuum brakes were in use and whether the average speeds of passenger and fast freight trains were as high as they are in Britain.

Yours faithfully,

P. S. LYNCH

30, Richmond Road, Cambridge

The Harrow Accident

August 10

SIR.—I was specially interested to read Mr. Lawrence's letter in your issue of August 7, as it seems to me that the most probable cause of the accident was a footplate mishap or distraction that prevented the driver of the Perth train from applying the brakes in time. If Mr. Lawrence's explanation is correct, the lesson of Harrow is not the expenditure of £17,000,000 on A.T.C. plus £500,000 a year for maintenance, but the provision of a plain plug-cock emergency brake valve near each exit from the footplate.

Many modern locomotive cabs are defective in prohibiting, by lack of foothold, any direct access from the footplate to the running board, which is the only sure refuge for the men if the boiler springs a bad leak into the cab; they must get ahead of it and be able to apply the brakes as they do so.

Yours faithfully,

W. A. TUPLIN

Beech Dell, Collegiate Crescent, Sheffield, 10

The Trains of Tomorrow

August 20

SIR.—The leading article under this title in *The Times* of August 19 is incorrect in stating that over 20 years ago the Weir Committee recommended main line electrification. The terms of reference to the committee were "to examine into the economic and other aspects of the electrification of the railway systems of Great Britain, with particular reference to main-line working, and to report their conclusions."

The committee accordingly did not make definite recommendations, but came to 27 "conclusions of major importance," which made clear the economic factors bearing on its remit as these appeared to carry weight in the years 1929-31. The principal findings were that, to get the best out of electrification, conversion must be on a wholesale basis involving the railways in a capital expenditure of £261,000,000, with a return of about 7 per cent.

The committee was aware that risks and contingencies beset its conclusions. The estimates on which they were based were necessarily of a general character and could not take into account local peculiarities that swell engineering costs when work starts on the site and practice replaces theory. The Sheffield-Manchester-Wath scheme should be a warning to the electrical enthusiasts. This was the first main-line conversion to be undertaken after the Weir Committee reported. Conditions seemed so much in favour of electrical operation that the L.N.E.R. Board approved the project as likely to yield a return of at least 10 per cent on the expenditure. So many difficulties have arisen in carrying the work forward that British Railways will be fortunate if they make any profit on the changeover from steam to electric traction.

The Weir Committee report will remain valuable as a statement of the economic situation in 1931. The arrival of the diesel-electric locomotion three or four years later introduced an entirely new factor into the question of railway motive power. In the United States the upsurge of the diesel is rapidly eliminating the steam locomotive and has brought electrification to a standstill even on railways like the Pennsylvania and New Haven, which had electrified many miles of line in the Eastern District where both freight and passenger traffic is dense.

An impartial inquiry into the possibilities of diesel traction on British Railways is long overdue and should precede any further plan for main-line electrification. The exclusion of the subject from the matters referred to the Committee on Electrification, appointed by the Railway and London Transport Executives in 1948, was a mistake.

Yours faithfully,

R. BELL

33, Avenue Mansions, Finchley Road, London, N.W.3

Courtesy on British Railways

August 20

SIR.—In view of the obloquy which it is now fashionable to heap upon servants of British Railways of all grades perhaps you will permit me publicly to acknowledge the outstanding helpfulness of the booking office staff at the tiny Essex station of Stanford-le-Hope?

Arriving there heavily laden last weekend and finding a general store, from which customarily one telephones for a taxi, closed, I asked a clerk for the whereabouts of the nearest public telephone. His response was himself to telephone (quite rightly, at my expense) and, when the taxi arrived to escort me to it carrying my luggage. When, somewhat hesitatingly, I offered him a tip, he refused, saying "It's part of British Railways' service."

On the return journey I found the same man going far out of his way to assist another traveller with plans for a walking tour in Essex. This traveller also wished to show concrete appreciation and was in turn refused, on the ground that it was British Railways' duty to help their customers.

Res loquitur ipsa, judices, quae semper valet plurimum.

Yours faithfully,

ANTHONY KIELY

15, Fitzjohns House, 46, Fitzjohns Avenue, London, N.W.3

Three Shillings Outwards, 25s. Back

August 25

SIR.—Your correspondent under the above title in the Scrap Heap, August 21, is under a misapprehension. His 97 lb. in three cases from London to Northern Italy would not cost 3s. The charge would include registration fee for three articles at 3s., excess baggage at 18s. 6d., i.e., about 9s. 3d. for 22 lb. or part thereof (this varies according to route) and the cost of 97 lb. from the Swiss frontier to Northern Italy at about 2s. 3d. per 22 lb., amounting to 11s. 3d., bringing the total cost to 32s. 9d.

If two passengers were travelling the registration fee would be 3s. There would be no excess baggage fee and the cost of 97 lb. from the Swiss frontier to Northern Italy would be the same, 11s. 3d., making a total cost of 14s. 3d.

A free allowance of 66 lb. per passenger is available only on the British and French railways, the Belgian Marine, the Belgian (for transit traffic only), Dutch (for through journeys to France and U.K. only) and Turkish railways. Elsewhere payment must be made on the gross weight.

Yours faithfully,

G. F. HAFTER

107, Mortlake Road, Kew, Surrey

THE SCRAP HEAP

Violence in Valais

Peach growers at Saxon, near Martigny in the Rhone Valley, incensed at a government policy of importing peaches from Italy to the alleged detriment of local production, earlier this month vented their dissatisfaction on the Swiss Federal Railways. With felled trees, lorries, and peach crates they blocked the Simplon line for some distance and took possession of Saxon Station for some twelve hours.

Wagons and sleepers were set on fire. The up and down "Simplon-Orient" expresses had to be diverted by the Loetschberg route.

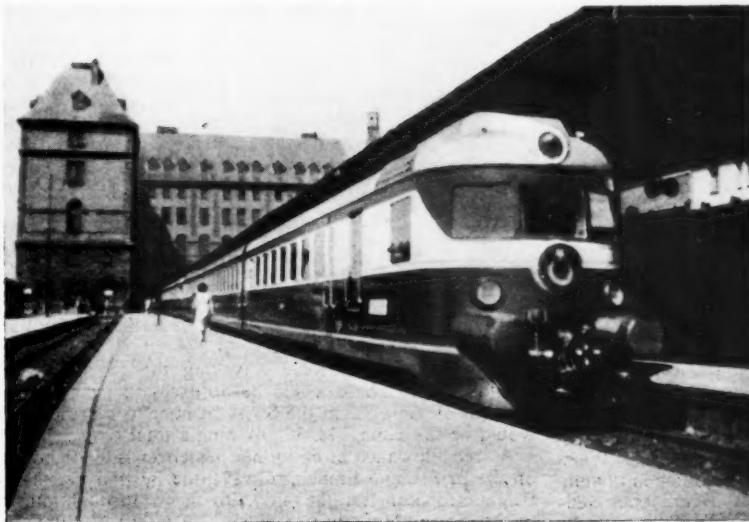
Four Hundred Miles to Rugby Match

Sheep farmers of the small town of Burgersdorp in Cape Province are reported to have chartered a special train at a charge of some £1,600 for the return journey of over 800 miles to Johannesburg for the recent Rugby match between the Springboks and Australia. This is believed to be one of the largest special train charters ever arranged with members of a small community.

Magnificent Cannon Street

Those who have been on the Thames during the holidays have been able to survey Cannon Street Station, of which the glass was removed early in the war and has not been replaced. That great defender of Victorian architecture, Professor A. E. Richardson, admits that the roof has a skeletal aspect. But parts of the station, he says, are "magnificent."

Diesel Traction in Turkey



Photo]

[A. Earle Edwards

Train of two 1,000-h.p. three-coach diesel units built by M.A.N. about to leave Haydarpasa terminus, on the Asiatic shore of the Bosphorus, Turkish State Railways

He adds that the side walls are the finest example of the massive structural brickwork of the Victorians, and is particularly in favour of the inner wall.—"Peterborough" in "The Daily Telegraph."

[Cannon Street was opened on September 1, 1866. The bridge over the Thames was designed by Hawkshaw, and Cannon Street Hotel, now offices (Southern House) by Edward M. Barry.—ED, R.G.]

Eastern Region Station Gardens

Coronation Year produced, for the Eastern Region station gardens competition, many flower beds with the red, white, and blue theme. Among Coronation displays, that at Seven Kings Station took pride of place, where a bed 34 ft. by 10 ft. had as its centre piece a representation of a crown with "E.R." within the design. The number of station gardens visited this year was 282 and the three special class awards were won by Wretham & Hockham, Long Stratton, and Seven Kings. In addition, 50 stations won first class awards, 54 second class, 63 third class and 42 fourth class.

Children's Railway

A second children's railway, similar to that successfully operated for some years in Budapest, has been opened at Nyiregyháza in north-east Hungary.

It is three miles long and will be run entirely by children. As in Budapest, the idea is that children who distinguish themselves at school receive as their reward a holiday on the railway doing

any job except that of driver or station-master.

The two railways are doubly useful; that in Budapest carries excursionists from the city into the Buda mountains, and the new one takes passengers from one of the principal squares of Nyiregyháza and the Sóstó Baths.

Across the Forty-Ninth Parallel

The first official stop of Canadian National Railways Museum Train in the United States, at Portland, Maine, heralded four "Canadian Friendship Days" in celebration of the centenary of the first international railway in the world.

The journey of the museum train from Montreal to Portland commemorates the first railway journey made between the two cities 100 years ago over the Atlantic & St. Lawrence Railroad, now part of the Canadian National system. It also has another parallel. In a pony express race to Montreal against the city of Boston in 1847 the city of Portland won its right to be the American terminus of the first international railway link. A letter from England, containing railway authorisation papers, were sent to each port. The first one to reach the postmaster at Montreal won the railway rights. Four white horses brought the Portland letter in to Montreal over the iced-over St. Lawrence River four hours ahead of the Boston team.

Engine Driver's Ambition

The sociological role of the railway has not been studied. I think that one reason must be that mankind in general looks at railways with the eyes of childhood: the desire to be an engine driver is forcibly renounced at some reasonable age like 20 and, while awe and admiration for the belching, dragon-like monster may fade a bit with the years, it never quite dies. Just observe how little to their hearts the kids of today are taking those silent, sinister diesels. The diesels lack filth, explosions, fire, and every known form of mechanistic disorder.

Some years ago I travelled from Dublin to Belfast and went forward to congratulate the driver on being, like myself when I drive, a doctrinaire full-regulator man. The job was a G.N.R. (I.) compound, I need hardly say. We talked for a while, had a bit of an argument about flange friction on curves—he swore the road was not properly banked outside Portadown—and that he hoped to devote the days of his retirement to organising a vast parliamentary row on the subject.

"Retirement?" I countered. When the job is finished, what would you like to be?"

And do you know what he said?

"I would like to be a little boy," he said.—"Myles na Gopaleen" in "The Irish Times."

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

Diversion at Rajkot

The metre-gauge line between Rajkot Junction and Rajkot Town, Western Railway, is to be diverted. The present line, two miles long, passes through the centre of Rajkot and causes frequent delays to vehicular and pedestrian traffic at four level crossings. It is proposed to build a new line beyond the western outskirts of Rajkot, known as the racecourse area, and a new town station in the Jaganath plot area. The work will cost approximately Rs. 12 lakhs and is expected to be completed by the end of 1954.

CEYLON

Increased Rates and Fares

The following changes in rates and fares took effect on August 1:

Passenger fares between all stations below Rambukkana (the Coast, Kelani Valley, Chilaw, Northern, Talaimannar and Batticaloa-Trincomalee lines and the main line up to Rambukkana) are increased by one cent per mile in respect of all classes, but the existing fares between stations on the hill-country sections (Rambukkana to Matale and Badulla) remain unchanged. All season ticket fares go up by 25 per cent. Charges for reservation of sleeping berths for first and second class travel are increased from Rs. 5 to Rs. 8, and from Rs. 2½ to Rs. 4, respectively.

Full parcels rates are increased by 10 per cent but concessionary rates allowed for perishables remain unaltered. Rates for the conveyance of horses, motor cars and other passenger train traffic are raised by 10 per cent. The classified rates for goods are increased by 10 to 25 per cent over the rates which

were introduced in July, 1950, and the rates for cattle and other animals by 20 per cent.

It is understood that these changes are likely to bring in an additional revenue of about Rs. 10,000,000 and reduce the deficit which is estimated to be over Rs. 20,000,000 for the year ending September, 1953. In spite of these increases, most rates and fares are still no more than 80 per cent over those before the war, although the cost of working has increased by over 300 per cent. The following statistics indicate the rise in expenditure since the war on salaries and wages, stores, materials and fuel:—

	1938-39	1948-49	1951-52
	Rs.	Rs.	Rs.
Salaries and wages	11,028,976	38,414,606	43,986,928
Stores and materials	... 1,928,017	6,224,905	8,308,004
Permanent way materials	... 1,346,466	3,989,159	5,309,463
Fuel and coal	... 2,378,206	13,673,372	15,480,923

The increases in rates and fares were also suggested by the Mission which was organised last year by the International Bank for Reconstruction & Development, and the increase in revenue which would result should go far to solve the railway's problem.

UNITED STATES

Loss by Flood Damage

Arising out of the disastrous floods that overwhelmed Kansas City in July, 1951, an action was brought against the Missouri-Kansas-Texas Railroad to recover the value of 23 head of cattle which died at Kansas City while in the charge of the railway. They were on the way from Omaha to San Antonio, Texas, but because of a breach made by the flood in the M.K.T. main line, the train concerned was returned to Kansas City, where the animals were unloaded at the

stockyards. The yards were then flooded, and 23 out of the 44 animals in the consignment were drowned. A District Court at San Antonio found against the railway on the ground that, although the flood was an Act of God, the railway was negligent in not getting the cattle to a place of safety after unloading, and in not providing food and water. This decision, however, has been reversed by the Texas Court of Civil Appeals, which because of the Act of God has ruled that the railway was not liable.

Developments at Ogden

Ogden, Utah, 37 miles north of Salt Lake City, is an important exchange point where the Union Pacific hands over to the Southern Pacific its through traffic from the Middle West to San Francisco. The two companies, through their jointly-owned Ogden Union Railway & Depot Company and Pacific Fruit Express subsidiaries, are now planning to spend \$4,000,000 on new and enlarged yard facilities at Ogden.

The present main yard will eventually be used for westbound traffic only, and a new East Yard with 111,900 ft. of new sidings is to be laid out for handling all eastbound traffic. It will be necessary to build two viaducts across the yard, one to carry the Bamberger Railroad and the other for highway traffic; two yard office buildings; a diesel fuelling station; and two control towers.

For the Pacific Fruit Express an island platform for van icing, long enough to accommodate 220 bogie refrigerator wagons, will be built, and of two existing icing platforms holding 70 and 66 wagons, one will be abolished; part of the equipment will be accommodated for the storage of 500 tons of ice, and an ice conveyor system connecting the storage with the icing platforms. The Union Pacific Railroad also is building a new marshalling yard at Spokane, Washington, with 58,700 ft. of additional sidings and all necessary facilities.

SWITZERLAND

Connections with French Railways

Electrification has been discussed between the French and Swiss authorities of the 90-mile Dijon-Vallorbe line, the only non-electrified section of the Paris-Milan main line via the Simplon Tunnel.

Representations have been made by Swiss interests in favour of electrification of the S.N.C.F. lines between Paris and the Swiss frontier at Delle via Belfort.

Connections with Southern Germany

Connections between southern Germany and Switzerland have suffered somewhat from the disappearance, as a result of the war, of the one-time intense traffic between southern Germany and north-eastern Switzerland, with Zurich as economic centre. Efforts are

Main-Line Working in East Africa



Kampala-Mombasa mail train between Kikuyu and Dagoretti, Kenya-Uganda Section, East African Railways & Harbours, hauled by 2-8-2 locomotive decorated for the Coronation

being made by economic organisations in north-eastern Switzerland to improve connections. One proposed improvement is the restoration of the second track, removed by the French occupation authorities in 1945, between Horb and Tuttlingen, both south of Stuttgart, or at least between Horb and Rottweil. It is feared that the postponement of this work will permanently impair the tourist traffic to north-eastern Switzerland; the Stuttgart-Singen-Schaffhausen-Zurich line also is an important route for goods traffic between the two countries.

The distance between Stuttgart and Zurich is 152½ miles, of which 122½ miles are in Western Germany (Stuttgart - Horb - Tuttlingen - Singen - Schaffhausen).

FRANCE

Supreme Transport Council

Referring to the note in the July 18, 1952, issue, the number of transport experts to serve on the council has now been increased from eight to ten. This means that S.N.C.F. representation is increased from two members to three. In addition, a change has been made in the disputes committee by the addition of a representative of the Ministry of Transport and of two other experts.

New Long Flat Wagon

The S.N.C.F. has designed and constructed a flat wagon similar to that of the Arbel Company described in the February 27 issue. The overall length

is 66 ft. 9 in., length of body inside end boards 60 ft. 8 in., and width of body inside stanchions 9 ft.

The S.N.C.F. wagon is 24·4 tonnes tare in comparison with the 27 tonnes of the Arbel-built wagon. Thus the maximum load which can be carried is 55 tonnes, which gives a load of 20 tonnes per axle. The load of 55 tonnes must be evenly distributed over the whole wagon, but loads of 40 tonnes and 30 tonnes need be distributed only over 42 ft. 8 in. and 22 ft. 11½ in. respectively.

The wagon is fitted with a pivoting shield at each end and with stanchions; in addition to compressed air brakes, a screw brake is mounted on a platform at the end of the wagon.

Of particular interest is the amount of welding in the construction of the underframe, which is made up of welded steel members with one shaped component. Each wagon constructed requires 1,378 ft. run of welding, and an automatic welding process known as the Unionmelt process is used, which makes it possible to attain a welding rate of 1 ft. 7½ in. a minute with a current intensity of 2,000 amperes.

Market Station at Lyons

Plans have been drawn up for the construction of a central rail-served market (principally for fruit and vegetables) at Lyons Perrache in place of four existing markets. Lyons, with its immediate suburbs, has a population of some 800,000; within a radius of 31 miles the population exceeds 1,000,000. In addition to serving this area, the

Lyons markets are also re-consigning centres for many towns in neighbouring départements, and during 1950 more than 100 wagon loads of fruit and vegetables were despatched to other countries.

The sales rooms in the market will not be rail served, but there will be rail loading platforms within the precincts of the market. Inwards rail traffic is expected to reach 100,000 tonnes a year and outward traffic 50,000 tonnes; the number of wagons to be handled is expected to be an average of 60 per day inwards and 35 a day outwards. It will be possible, however, at peak periods, to deal with up to 180 inwards wagons and 100 outwards wagons daily.

Facilities for handling traffic into and out of wagons and lorries will include roller conveyors, lifting trucks (to move pallets) and trailers; there will be separate inward and outward platforms, and it is intended to prohibit the circulation of large road vehicles within the market. It is expected that the organisation of the handling arrangements will be entrusted to an undertaking which specialises in this work.

One particular advantage from the use of a rail-served market is that goods sold by sample can be re-consigned if necessary to another destination in the same wagon without unloading. It is expected that the costs of moving goods from railway yards to the present markets will be reduced by two-thirds when the new facility becomes available in about two years time.

Publications Received

New Zealand Railway Engines. Petone, New Zealand: *The New Zealand Railway Observer*, 30, Plunket Avenue. 8½ in. x 6½ in. 32 pp. Illustrated. Paper covers. Price 5s.—This little book contains illustrations of 30 past and present locomotive classes of the New Zealand Railways, and of a typical industrial locomotive. Below each illustration are given some of the principal dimensions of the class, followed by a short history. The locomotives depicted range from the Fell type machines which work the Rimutaka Incline and single and double Fairlies to the present-day "Ja" and "Ka" steam and "Ed" and "Ew" electric classes.

Famous British Engineers. By Leslie Halward. London, 1953: Phoenix House Limited, 38, William IV Street. 8½ in. x 5½ in. 192 pages. Price 12s. 6d.—This collection of biographies is intended for young readers and combines illuminating background material on the early lives and personalities of its subjects with a description of their technical achievements. With its many examples of difficulties overcome under the stimulus of faith in an idea, the book is an encouragement to an endeavour. Its subjects range in period from James Brindley, the first of the British canal makers, to James Nasmyth

and the steam hammer. Others whose lives are described in its pages are John Smeaton, James Watt, James Telford, John Rennie, and George Stephenson. The illustrations include reproductions of portraits of the engineers and photographs and prints of their principal works. There are plates of the Rainhill trials and Britannia Tubular Bridge.

Diesel Locomotives. London: The Times Publishing Co. Ltd., E.C.4. 5½ in. x 8½ in. 20 pages. Price 1s. 0d.—This booklet is based on ten excellent photographs from *The Times Weekly Review*, showing British and Irish diesel locomotives and railcars in service. Each of these photographs has a page of text opposite describing briefly the unit and its work.

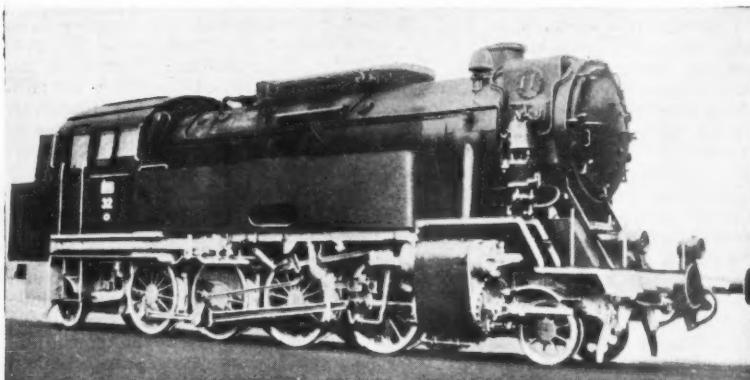
ABC of British Railways Steamers. Hampton Court, Surrey: Ian Allan Limited, Craven House. 6 in. x 4 in. 47 pp. Illustrated. Paper covers. Price 2s.—This small publication provides an informative record of British Railways' steamers sailing from all Regional ports except the North Eastern. After the last war, the British Railways fleet was very greatly depleted, many of these small familiar vessels having been destroyed on active service. In replacement of these losses the postwar years have seen the introduction of

new, more powerful and more commodious vessels on the main services which are now operated almost entirely with modern radar-equipped, oil-burning turbine steamers of the latest design. Tables showing sailing times, tonnage, accommodation, speed and other statistics are given on all the services and there are many photographs.

Federal Regulation of Transport in the U.S.A. Paris, 1953. Organisation for European Economic Co-operation, 2, Rue André-Pascal, 16e. Also obtainable from H.M. Stationery Office. 9½ in. x 6 in. 180 pp. Price 8s.—This report formed a major item for discussion at the European Inland Transport Conference earlier this year, and is based on the observations of a mission from Europe sent to the United States in March-April, 1952. Its first part gives a general description of the political organisation as it affects transport. The second part outlines the regulations governing transport and deals in detail with the work of the Interstate Commerce Commission, reviewing successively its jurisdictional aspects, its statutory powers and obligations, and the general principles on which it functions. The concluding discussion of regulations peculiar to each type of transport deals more particularly with roads and inland waterways, as railways were the subject of a previous report published in 1952.

Krupp Superheated Tank Engines

Powerful design for German standard-gauge local railway with sharp curves



Bentheimer Railway superheated tank engine with a tractive effort of 36,900 lb. per sq. in. at 75 per cent boiler pressure

IN February, 1950, Fried. Krupp Lokomotivfabrik, Essen, delivered two, 2-8-2 superheated tank engines to the Bentheimer Railway Co. Ltd. The locomotives were designed according to the principles published as a guide in 1949 by the committee of the Association of Private Railways, Western Germany. At the annual meeting of delegates from private railways held in Constance, reference to which was made in *The Railway Gazette* of June 2, 1950, a proposal was accepted that the private railways should be consolidated in a general federation, to be named the Federation of non-Federal owned Railways, with the object of formulating policies of common interest.

The following are the principal characteristics of the locomotives:—

Gauge	4 ft. 8½ in.
Cylinders (2), dia. and stroke	22½ in. x 26 in.
Coupled wheels, dia.	4 ft. 5½ in.
Leading and trailing truck wheels, dia.	2 ft. 9½ in.
Rigid wheelbase	5 ft. 7 in.
Total	35 ft. 1½ in.
Heating surface:—	
Evaporative	1,530 sq. ft.
Superheater	580 "
Total	2,110 "
Boiler pressure	199 lb. per sq. in.
Grate area	32.8 sq. ft.
Coal capacity	3.45 tons
Water	2,710 gal.
Adhesive weight	63.3 tons
Weight in working order	93 "
Tractive effort at 75 per cent. boiler pressure	36,900 lb.

Design Details

The engines are designed to negotiate a minimum curve of 329 ft. and for a maximum speed of 53 m.p.h. The leading and trailing axles are combined with the leading and trailing coupled axles respectively to form Krauss-Helmholtz type trucks, which are said to contribute considerably to the satisfactory riding qualities of the locomotives when operating at the maximum permissible speed.

The two intermediate coupled wheels have thin flanges, and a rigid wheelbase of 5 ft. 7 in., which features

enable the locomotives easily to negotiate minimum curves of 329 ft. The coupled axles, with the bunker and tanks full, have an axleload of 15.82 tons each.

Boiler Construction

With the exception of the riveted seams between the outer firebox and the boiler barrel, the boiler is completely welded. The smokebox is welded to the boiler barrel course by a rolled ring of special section. Gusset stays at the smokebox tubeplate and the outer firebox back plate, as well as the cross-stay seatings are welded; the threadless cross-stays are welded to the seatings. The steam and feedwater domes are riveted.

The inner and outer fireboxes are connected by drifted staybolts and crownstays, and to the foundation ring by a double row of rivets, while the inner firebox is of copper and completely welded. A Schmidt superheater and Wagner regulator are fitted, together with Ross pop safety valves, and a hand-operated Gestra type blowdown valve.

Feed Water Supply

Other equipment includes a Krupp live-steam injector having a capacity of 39.6 gal. per min.; a Krupp open-pipe feedwater heater in the upper part of the smokebox; a compound feed pump, with single-stage water portion, with suction air vessel and shock absorber; and a shunt-connected hot-water storage tank, for feeding during a poor supply of exhaust steam; the injector and pump are operated by a common starting valve. The regulator, boiler feed, and sandbox are lodged under a common cover, while the steam manifold is located outside the cab and easily accessible. The ashpan is self-discharging and completely welded.

The engine frame, which is made up to resemble that of the bar type, is

stiffened by robust frame connections, special care being given to the welded frame supports between the cylinders, from which a longitudinal stiffening plate is fitted at the level of the frame top edge as far as the driving axle. The horn stays are bolted to the frames, and all axleboxes have gunmetal bearings lined with whitemetal, containing 80 per cent tin. Top lubrication is provided. The axlebox liners are also of gunmetal.

Bearing springs of the leading axle and those of the second coupled axle are joined by equalisers to form a group of springs; the second group is formed by the springs of the trailing axle, with those of the third and fourth coupled wheels.

The coupling and connecting rods are fluted, and are fitted with gunmetal bearings lined with whitemetal of a similar composition to the axleboxes. Adjusting wedges are provided, and the oil cups are welded to the rod ends. The cylinders are of cast iron, 22½ in. dia. x 26 in. stroke; the piston valves, of the Karl Schulz type, are 11½ in. dia.; piston and piston valve rods are of the tail rod type with Espey stuffing boxes. Lubrication is provided by two De Limon Fluhme lubricators accommodated in the cab.

Compressed-Air Braking

The locomotive is fitted with compressed-air braking, with an additional brake of the Knorr type; the air pump has two stages. The coupled wheels are braked from one side of the centreline by means of brake blocks with divided slippers. Because of the side play on the leading and trailing coupled wheels, the hangers are fitted with universal joints; a counterweight brake acts as a handbrake on the same brake rigging.

The water tanks and coal bunker are of welded construction, and have a capacity for 2,710 gal. of water and 3.45 tons of coal respectively. An enclosed cab is provided, and is fitted with entrance doors with drop windows; sliding windows with windscreens and fixed windows are fitted at the cab sides, together with revolving windows on the front and back plates, each with sun glare protection; a sliding panel is provided in the cab roof.

The sanding gear and warning bell are compressed-air operated, and the equipment includes steam heating, pyrometer, and a Stone Deuta speedometer. The feed pump is provided with a stroke indicator, and a feedwater temperature thermometer is fitted.

The electrical equipment includes cab, engine marker, and motion lighting, current being supplied by a turbo-generator, 24 V., 0.5 kW.

Eastern Region Electric Locomotive Performance

Runs between Wath and Dunford Bridge compared with steam journeys

By P. W. B. Semmens, B.A.

THE first stage of the Manchester-Wath-Sheffield electrification includes the seven-mile bank on the Worsborough branch between Wombwell Main and West Silkstone Junctions. On this section there are two miles of 1 in 40, which always have presented an operating problem both to ascending and descending trains. The measures taken before electrification and the present operating methods were described in *The Railway Gazette* of July 31 and August 7.

The author has been privileged to study running on several occasions, which cover the change from steam to electric working. Fig. 1 and Table 1

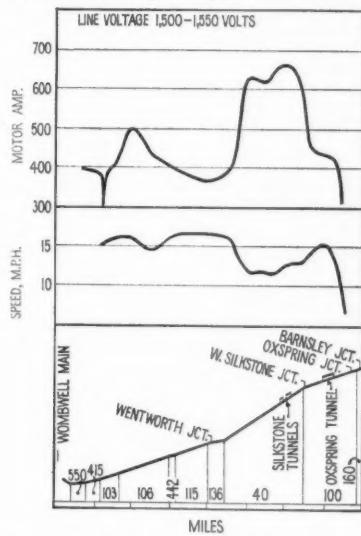


Fig. 1—Motor current and speed from Wombwell Main to Barnsley Junction with 850 tons

show the performance of one of the Bo + Bo locomotives between Wombwell and West Silkstone with a train of 47 wagons weighing approximately 850 tons, and provided throughout with rear-end assistance from another identical locomotive. Now that a single locomotive works each train from Barnsley Junction to Dunford Bridge the maximum load has been reduced to 750 tons. The figure also shows the gradient profile.

While moving out of the sidings at Wombwell, the first four notches were used for three minutes, but after that notching was carried out quickly up to full field. There was no tendency to slip and neither the sanders nor field-weakening on the leading motors were required.

The branch has suffered from colliery subsidence during the past, and

although not shown on the profile, there is a marked dip in the track at the Worsborough Bridge Crossing, where the level of the highway could not be made good. Operating a long loose-coupled train over this requires care, and approaching it the leading

Table 1
WOMBWELL SIDINGS-BARNESLEY JUNCTION

Train engine: Bo + Bo No. 26021
Banker: Bo + Bo No. 26022
Load: 47 wagons, 850 tons gross.

Distance	—	Times	Speeds
(miles)		(min. sec.)	(m.p.h.)
0-0	Wombwell Sidings ...	0 00	154
0-5	Worsborough Dale ...	5 09	154
1-1	Worsborough Bridge ...	7 26	16
1-6	Kendall Green ...	9 21	154
3-5	Wentworth Junction ...	16 26	164
4-3	Milepost 3 ...	19 35	12½
5-3	Milepost 2 ...	24 39	12½
5-9	West Silkstone ...	28 01	13½
6-3	Milepost 1 ...	29 28	15½
7-3	Barnsley Junction Sidings ...	35 39	—

motorman progressively reduced the power output of his locomotive to throw the weight of the train on to the rear locomotive. Recent modifications to the control circuits of the locomotives enable the starting resistances to be cut in progressively, but at the time of the author's journey it was necessary to return the controller through the "off" position when making each reduction in power.

In Table 2 are given the timings and speeds of two steam-hauled trains over the 1 in 40, compared with those for the electrically-hauled journey described. Also included are the figures for a special passenger train, hauled by a single electric locomotive, which was worked in full parallel over the 1 in 40 portion of the bank. In each case, zero is taken as the passing time at Milepost 3½, which is just before the foot of the steepest section. Banking assistance on the second steam journey was provided by the Gresley Beyer-Garratt 2-8+8-2 No. 6999, built in 1925 specially for this work.

Compared with the slower of the steam-operated trains, which was somewhat heavier, the electric locomotives on freight working showed a saving of 11 min. in running alone over this section, in addition to which no time was required to attach and detach the assisting locomotives. A 15-m.p.h. P.W. restriction was in force over much of the branch at the time of the author's journey, and this precluded the use of parallel grouping of the motors, which would have given an even greater saving in time.

The drawbar power outputs corrected to level track of all the locomotives on the trains are given at the foot of the table. A much higher proportion of their rated maximum power was developed in the case of the elec-

Table 2
STEAM AND ELECTRIC JOURNEYS COMPARED

Journey No.	1		2		3		4	
Locomotives	Number	Class	Number	Class	Number	Class	Number	Class
63625 63872 77418 63791	" 04/1 " " 01 " M.O.S. " 04/3 "		63582 69999	" 04/7 " " U1 "	26021 26022	" EM1 " " EM1 "	26013	" EM1 "
Load	Number	Weight	Number	Weight	Number	Weight	Number	Weight
	56	960	31	500	47	850	5+	165
	Times	Speeds	Times	Speeds	Times	Speeds	Times	Speeds
Milepost 3½ (pass)	min. sec.	m.p.h.	min. sec.	m.p.h.	min. sec.	m.p.h.	min. sec.	m.p.h.
0 00	7	0 00	—	—	0 00	16½	0 00	32½
Milepost 3	5 18	5½	3 26	8½	2 10	12½	0 50	35
Milepost 2½	10 18	6	6 59	8½	4 43	12	1 45	32½
Milepost 2	15 16	6	10 15	9½	7 15	12½	2 40	32½
Milepost 1½	20 44	5½	13 36	9½	—	—	3 43	27½
West Silkstone	21 40	—	14 28	—	10 35	13½	4 12	—
Average d.b.h.p. mileposts 3½-1½		1,325		1,140		1,840		1,370
Maximum d.b.h.p. of locomotives*		4,356		3,104		3,480		1,740
Actual d.b.h.p.		30-4%		36-7%		52-8%		79-0%
Maximum d.b.h.p.								
Weight of train		1.97		1.67		4.83		1.88
Weight of locos.								

* In the case of steam locomotives, the maximum d.b.h.p. is taken as 40 × (grate area in sq. ft.). For the electric locomotives the one-hour full-field rating is given.

† Passenger coaches. § Eased for junction.

§ Milepost 3½-milepost 2 only

tric locomotives. In addition, the ratio of the weights of train and motive power was much higher with the electrics in Journey No. 3. On Journey No. 1, the force necessary to hold the combined weight of the four locomotives on the 1 in 40 was approximately equal to the nominal tractive effort of one of them, which would thus be doing virtually no net work on the train.

The peak motor current on the leading electric locomotive was 655 amp., registered at the point where curvature and a local increase in gradient above the nominal 1 in 40 coincided. This represented only 82 per cent of the maximum permitted current (800 A.), so that the locomotives clearly had power in hand to cope with adverse weather conditions. On Journey No. 2, approximately 120 shovelfuls of coal were put through the firehole of the Garratt during the 2½-mile journey—a consumption of 6 cwt. a mile.

Improved Operating Conditions

Conditions in the tunnels have improved immensely as a result of electrification. With up to four steam locomotives passing through on one train, visibility was usually nil and the heat could become oppressive. At one time No. 69999 carried respirators for the crew. It required considerable skill on the part of the drivers of banking engines in such circumstances not to lose contact with the rear of the train should their engine slip on the wet rail. It is now possible to sight the Oxspring colour-light distant, situated beyond the far mouth, at all times whilst passing through the tunnel.

The overall running time on the westbound electric freight journey from the sidings at Wombwell to those at Barnsley Junction was 35½ min.—all but 40 min. less than the scheduled time for a similar steam-hauled train, which had to stop for banking assistance. The ability that is conferred by electrification to carry more traffic over the line is thus amply demonstrated.

A return journey was made on the leading locomotive of a pair hauling 60 empty coal wagons from the exchange sidings at Dunford No. 5 Box to Wombwell Main. The total load was approximately 450 tons, or 75 per cent of the maximum permitted with two locomotives in this direction, east of Barnsley Junction, although a single locomotive can manage 600 tons from Dunford Bridge to this point. Apart from the initial acceleration out of the sidings, power was not required on the falling gradients. Table 3 gives the details of speeds and times for this journey. Use of the straight air brake was sufficient to hold the train when adverse signals were sighted prior to it being turned "inside" at the loop west of Penistone, in order to overtake a steam-hauled train. There is a permanent speed restriction over Oxspring Viaduct, and on the journey described this was followed by a temporary re-

striction at West Silkstone, as well as two signal stops totalling 4 min.

Passing West Silkstone, the train was held on the air brake until it was clear of the junction and on to the 1 in 40 gradient. Speed was then allowed to increase rapidly to approximately 25 m.p.h. as part of the sequence for

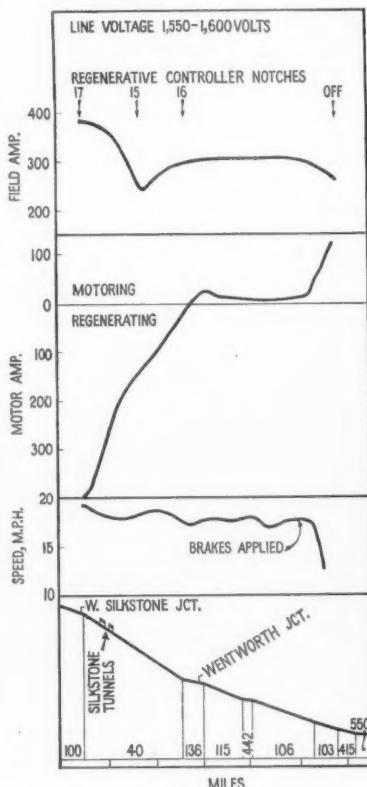


Fig. 2—Excitation, regenerated current, and speed down Wentworth Bank

starting regenerative braking. The normal procedure comprises increasing speed to slightly above 16 m.p.h. (the minimum at which this type of braking is effective), moving the regenerative

Table 3
DUNFORD BRIDGE NO. 5 BOX—WOMBWELL SIDINGS
Train engine: Bo + Bo No. 26021
Pilot: Bo + Bo No. 26022
Load: 60 empty wagons. Approx. 450 tons tare

Distance	—	Times	Speeds
(miles)			
0.0	Dunford Bridge No. 5 Box	0 00	—
—	Milepost 26 ...	Check through loop.	30
4.4	Penistone ...	14 42	—
5.1	Barnsley Junction ...	17 10	—
5.4	Oxspring Junction*	18 39	—
6.5	West Silkstone ...	31 41	19
9.0	Wentworth Junction	40 06	17½
10.9	Kendall Green ...	46 43	17½
11.4	Worsborough Bridge	48 21	17½
12.0	Worsborough Dale	50 21	—
12.9	Wombwell Sidings ...	57 47	—

* Severe permanent speed restriction

control lever round until the motor voltage balances that of the line, and finally putting the controller into the full-field position. Once this condition has been established, the degree of braking can be varied simply by moving the regenerative control lever to the appropriate notch. From the cab of one of the locomotives, the sudden retardation on the occasion of the author's journey, although smooth, was most marked.

In Fig. 2 the speed and current returned to the line are shown relative to the gradients. It will be noted that a very steady speed was maintained in spite of the wide variations in inclination, and without large changes in the controls of the leading locomotive. When the speed fell below 18 m.p.h., the locomotive began motoring slightly until the speed had increased once again. A brake application for adverse signals near Wombwell caused a marked slowing, and the motors took a current of 130 amp., before regenerative braking was stopped. From Barnsley Junction the net time of 37 min. should be compared with a schedule of 57 min. for a comparable steam-hauled train, which included a stop at each end of the 1 in 40 section.

On another journey, four electric locomotives coupled together, with only three under power, covered the 9½ miles from Wath sheds to West Silkstone in 32 min., inclusive of a half-minute signal stop at Aldam Junction. The controllers were kept in series throughout. Speed was sustained at 20 m.p.h. on the 1 in 40, with a maximum locomotive current of 290 amp. The locomotives under power were producing approximately 1,100 h.p. between them, and taking 1,700 horsepower from the line.

After uncoupling into two pairs in order to comply with the loading restrictions over Oxspring Viaduct, the first pair reached 43 m.p.h. on the 1 in 124 gradient beyond Penistone, with the leading locomotive in full parallel which would correspond to an equivalent d.b.h.p. of 460 h.p. The current being taken by the locomotive was 340 amp., at 1,500 volts, which corresponds to 685 horsepower. The difference of 225 h.p. would be accounted for by the increased rolling resistance of the second locomotive compared with an equivalent weight of train, losses in the transmission, and the frontal resistance of the leading locomotive, which would have been considerable in the face of the stiff westerly wind.

At all speeds the locomotives ran smoothly, although, with an axle loading of 22 tons, the occasional rail-joint that tended to go down could be felt, when travelling slowly, rather more than when in a carriage.

The author wishes to express his thanks to the Railway Executive for the facilities afforded him, and also to the Metropolitan-Vickers Electrical Co. Ltd. for their assistance in preparing this article.

French High-Speed Bo-Bo Locomotives

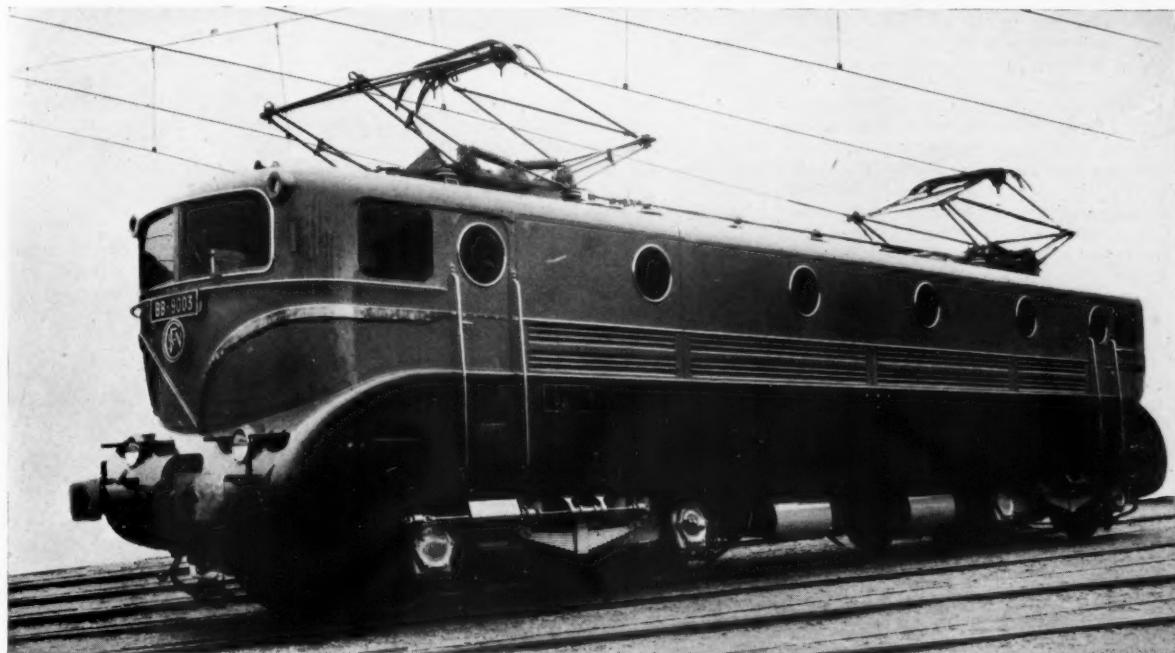
Prototypes mark further step in process of weight reduction begun when "7101" class was introduced

EXPERIMENTS have been initiated by the French National Railways with high-speed Bo-Bo locomotives having a 20-tonne axle load and developing 4,000 h.p. The prototype illustrated, which is now undergoing trials, has been built by the Matériel de

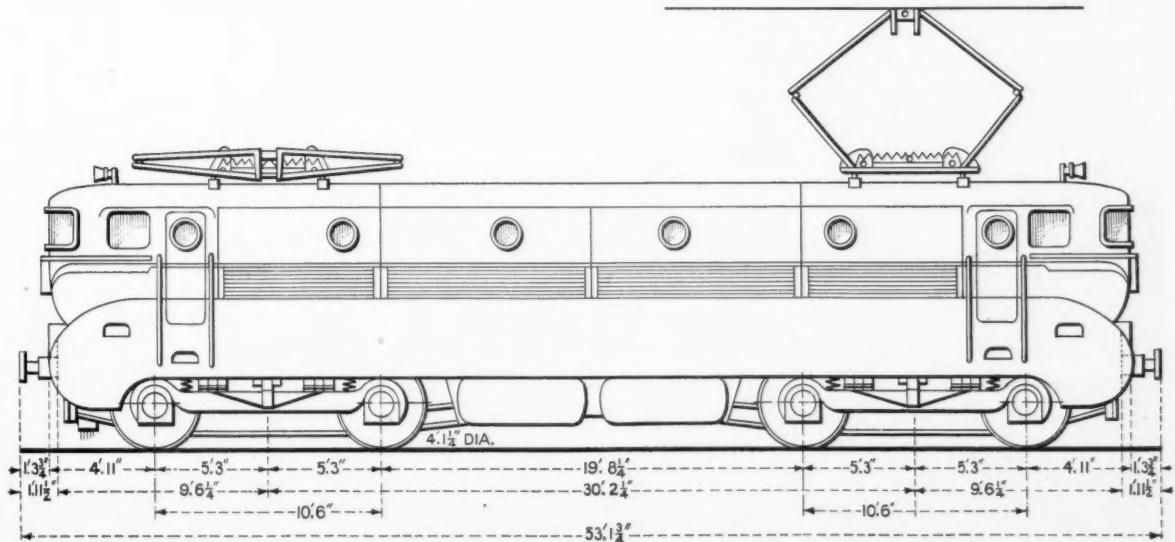
Traction Electrique group (Schneider-Jeumont-S.W.) and is equipped with four Oerlikon motors. A similar locomotive, No. 9004, from the same builder, is being fitted with Schneider-Westinghouse motors.

Both these locomotives are similar in

mechanical construction. The all-welded bogie frames are supported by coil springs mounted on the equalising beams, at the ends of which are large Silentbloc bushes forming the axlebox attachments. The weight of the body is transferred to the bogies through side



One of the four prototypes with which the S.N.C.F. are investigating the performance of powerful Bo-Bo locomotives at high speeds with heavy trains



Principal dimensions of the locomotive built by Matériel de Traction Electrique, with Oerlikon motors

bearers and laminated springs. Tractive effort is transmitted to the body longitudinally through drawbars mounted as close to rail level as possible at the bogie end so as to minimise weight transfer, and operating through shock-absorbing devices.

Two motors are mounted at the centre of each bogie (there being no bogie pivots in the ordinary sense), and drive the main gearwheels through intermediate gears. Each main gearwheel is coupled to the driving wheel at the opposite side of the bogie by means of a hollow cardan shaft surrounding the axle. Flexible connection between one end of the cardan shaft and the resilient main gearwheel, and between the other end and the driving wheel, is provided by an articulation system incorporating Silentblocs.

The gear trains between the motor pinions and the cardan shafts run in gearcases which are integral with the bogie frames. Provision has been made for coupling the two motors in a bogie by means of an intermediate pinion. In these circumstances the drawbar connections to the body would be taken from a higher point on the bogie, and adhesion in the two conditions would be compared.

The body construction is planned so that the upper parts of the side walls and sections of the roof can be dismantled in a few minutes. A large cen-

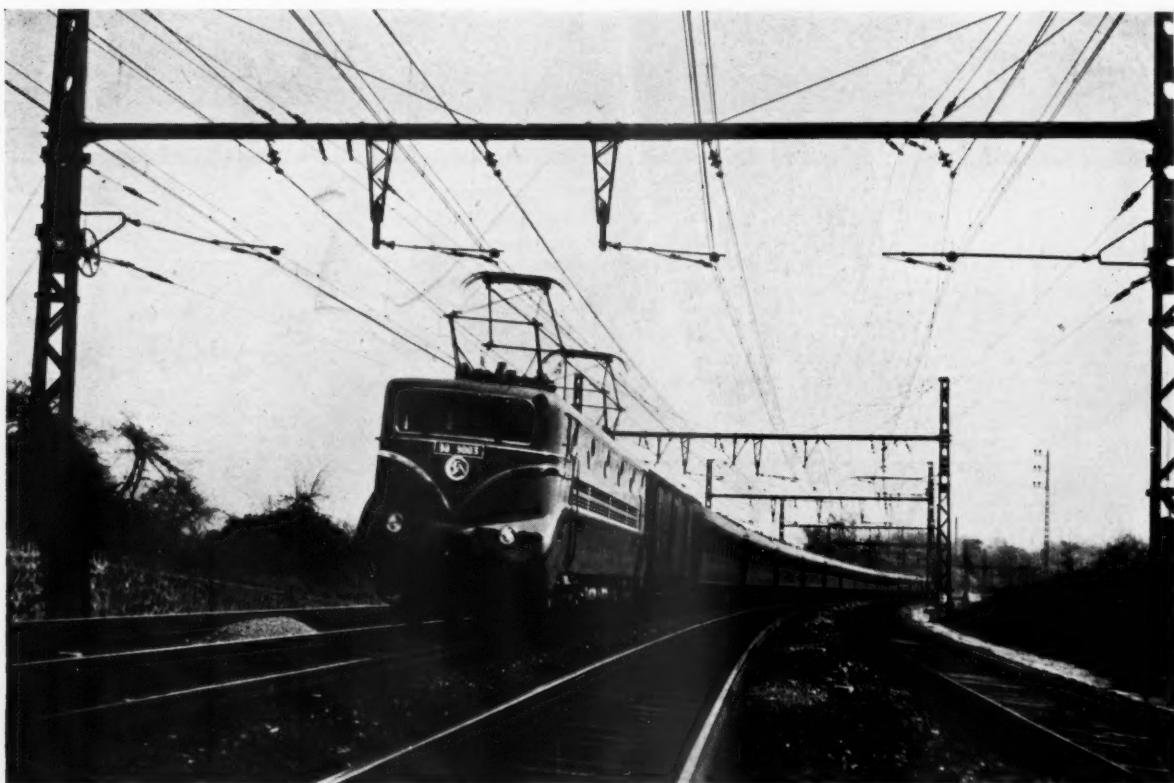
tral compartment between the driving cabs houses the control frames and auxiliary machines, with passageways at each side. Behind the cabs at each end of the body are the motor-blowers and the inductive shunts for the field-weakening circuits; also, at one end only, the two motor-compressors. Half the control apparatus block is occupied by the starting resistances, which are cooled by five small blowers connected in parallel across the last section of resistance to be short-circuited. In this way the blowers are in operation on any of the resistance notches, but stop automatically on the continuous running notches.

Control is by series-parallel or parallel connection of the four motors, and is effected by the JH camshaft system with electric servo-motor drive, which performs the resistance notching, transition, and field-shunting. Acceleration is automatic, but manual control is available if necessary. There are 23 notches in series-parallel and 19 in parallel, together with 10 weak-field notches in each grouping, only five of which, however, are running notches. The locomotive therefore has 12 economical running speeds.

Each Oerlikon traction motor weighs 4 tonnes and is rated continuously at 1,080 h.p. at 1,500 V. (1-hr. rating, 1,200 h.p.). The locomotive ratings of 4,320 and 4,800 h.p. therefore approximate

closely to the "7101" Co-Co class on the Paris-Lyons services, which are rated at 4,500 h.p. continuously and 4,815 h.p. for one hour, but with a weight of 107 tonnes against 80 tonnes. The motors have six poles, with compensating windings, and operate normally with a minimum field of 37 per cent, although this can be reduced to 30 per cent experimentally. An interesting feature of the companion locomotive, No. 9004, will be the use of four-pole Schneider - Westinghouse motors without compensation, but nevertheless able to operate with 30 per cent field in series-parallel and 40 per cent in parallel.

These two locomotives are required to be capable of hauling 715 tonnes on the level at 87.5 m.p.h., and the study of their performance will concentrate on their riding qualities and effect on the track when travelling at speed. Two more prototypes to meet a similar specification have been built in Switzerland by S.L.M. and Brown-Boveri. These follow closely the mechanical design of the 4,000-h.p. Bo-Bo locomotives introduced on the Berne-Lotschberg-Simplon Railway in 1946, which were noteworthy at that time for providing 1,000 h.p. per axle in motor bogies without non-motored guiding axles. The first of these two locomotives, No. 9001, was delivered to the S.N.C.F. in June.



Photo]

[J. Porcher

The first of the French-built Bo-Bo prototypes, No. 9003, near Brunoy on the Paris-Lyons main line during initial trials

New Walker Mobile Crane

Eight-ton lift with patent outriggers: many railway applications



Adaptability of swan-neck jib in yard working

A DEMONSTRATION was held on August 21 of the Walker 6/8-ton mobile crane, manufactured by Walker Bros. (Wigan) Ltd. at their Wigan Works. One of this type has been built for British Railways. The demonstration included lifting tests, road tests, and ascent of steep inclines.

The crane is a 4LW Gardner diesel-electric pneumatic-tyre rigid six-wheel vehicle. It is one-man operated and has good manœuvrability in confined spaces, making it suitable for goods shed working. The crane is electrically operated, all crane and vehicle controls being arranged inside the driver's cab, from which the operator has a full view of the crane, which is capable of slewing through 360 degs. in 20 sec. At a maximum radius of ten feet, the crane is capable of lifting six tons and with the use of patent outriggers, eight tons.

Retractable Outriggers

The hydraulic outriggers are controlled from the cab by pump and distributor valve, and when not in use, fold up mechanically and automatically behind the cab without increasing the overall width of the vehicle.

They are hinged at their centres and opened by a hydraulic ram. When the arms are extended fully, the hydraulic circuit is diverted to operate the outrigger jacks, which possess a long stroke in order to take up inequalities in terrain contour and to permit full ground clearance when folded. Upon release of hydraulic pressure through

the driver's control, the jacks at once return to normal position and the out-

riggers fold as described. Extension or retraction can be effected by the driver from his cab in under 45 sec.

Motive Power

The vehicle is mobile over a wide range of distance and speed. The crane is powered by a 36-b.h.p. electric motor, which is excited from the diesel engine and electric generator combination. The diesel engine is coupled direct to a 32-kW. generator. Its governed speeds are 1,700 r.p.m. for road travelling, 1,300 r.p.m. when hoisting and slewing, i.e., at maximum torque. At these respective speeds the engine output is 75 b.h.p. and 59 b.h.p. The 32-kW. generator is shunt wound, drip proof and fan ventilated. It is rated for continuous duty and is capable of approximately 335 V. 80 A. 1,750 r.p.m. for short periods, the variable voltage being obtained by operation of the engine throttle.

The traction motor, 36 b.h.p., 335 V., 1,500 r.p.m., is coupled by a needle roller bearing propeller shaft to the worm-driven axles of the rear bogie. This motor also is continuous rating. Accessibility of all parts requiring maintenance has been specially studied.

Turntable and Jib

Mounted on the chassis main side-members and forward of the bogie centre line is the fixed base of the



Outriggers in use during heavy lift

roller-mounted turntable, the upper half of which carries the vertical "A" framing forming the pivotal point of the hoisting jib. The counter balance weight is also attached to the upper portion of the turntable, as also are the gears for power hoisting, slewing, and luffing. Compressed impregnated Ferodo bearings are fitted on the turntable main bearing and also in other suitable positions. Maintenance thereby is reduced to a minimum. Roller and ball bearings for the various shaft mountings ensure freedom from friction losses in conjunction with high efficiency worm drives for hoisting, slewing and derricking. The crane jib has

an effective reach of 12 ft. 1 in. for a three-ton load from the extreme width of the vehicle, similarly when craning at the rear a reach of 9 ft. 1 in. is available.

To permit increased working clearance, a swan-neck jib can be provided. This is of particular use in goods yard working. When travelling the jib is folded horizontally and longitudinally over the cab, and anchored to the chassis frame. In this position the overall height is 14 ft. 1½ in. (swan-neck jib 14 ft. 7½ in.). A number of alternative jib lengths are available.

Safety devices can be provided to prevent overloading, overwinding and

overderricking, automatically adjusting themselves to the safe range for the conditions under which the crane is working, without requiring adjustment or calculation by the driver.

Braking is exceptionally powerful. Continuous flow hydraulic brakes are operated by foot on all six wheels. The handbrake operates on all four rear bogie wheels, and is hydraulically assisted. Stability of the vehicle is ensured by the maximum spaced twin tyres, presenting a wide ground contact area.

Road speed, unladen, is up to 15 m.p.h.; the negotiable gradient, in low gear, is 1 in 12.

Improvements at Sunderland Station

Replacement of overall roof by umbrella roofing and remodelling of concourse and buildings



New facade to southern concourse

THE North Eastern Region is modernising Sunderland Station at a cost of £50,000. Work already completed includes the remodelling of the concourse and buildings at the south end, and removal of the overall roof and erection of umbrella roofing over the platforms. Remodelling of the concourse and buildings at the north end is now being carried out.

The platforms and lines of Sunderland Station lie in a cutting running north and south and bounded by retaining walls on the east and west sides. Until recently, platforms and tracks were covered by a roof of overall type carried on semi-circular arch ribs spanning between retaining walls and erected in 1878.

This roof suffered bomb damage in 1943, when part of the overall roof was replaced by platform roofs of umbrella type. Access to the platform is from concourses at street level at the north and south ends.

To take down the arch ribs, central

portions were first lowered, having been cut through by oxy-acetylene burner. The remaining portions from the springings to the quarter points were then lowered by locomotive steam crane working from the tracks. This work was carried out at weekends without interruption to essential traffic.

Welded Construction

The erection of the umbrella roofing followed. This is of light-welded construction and its cladding is of glazing throughout, which produces an effect of light and space in contrast to the original roof, and is considered justified in a site such as this where the platforms are in a cutting.

The roofing over the south concourse is carried on a welded portal frame construction with propped cantilever extensions to the side walls and is clad with insulated steel roof decking with asphalt sheet finish and inset patent glazing. The interior accommodation of the concourse has been replanned.



Concourse and booking office at the south end



The inquiry and booking office, with recessed metal luggage lockers, are on the left of the entrance and on the right is a bookstall with ladies' room. The floor to the concourse is of heather tiles; office screens facing it are of stained hardwood shop-fitting work. Heating is by gas convector heaters in the offices and Colt-type ventilators are provided in the side-wall glazing.

The architectural work was carried out to the designs of Mr. A. N. Thorpe, Architect, North Eastern Region. The whole of the work was under the direction of Mr. A. Dean, Civil Engineer, North Eastern Region.

New umbrella roofing over platform

Electric Locomotive Working West of the Woodhead Tunnel



Photo

[The Manchester Guardian

Eastern Region Bo+Bo electric locomotive passing Torside reservoir while piloting a goods train to Crowden as part of the training programme for motormen required in the next stage of the Manchester-Sheffield-Wath electrification

ELECTRIC LOCOMOTIVE REBUILDING.—An interesting conversion has just been carried out by the Chicago, Milwaukee, St. Paul & Pacific Railroad of four of the electric locomotives built in 1915 for the inauguration of electric working over the

438 miles of its Seattle main line between Harlowton, Montana, and Avery, Idaho. The rebuilt locomotives have been assembled into twin units having operating characteristics which are expected to be similar to those of 4,500 h.p. diesel

units. The rebuilt units have been equipped with streamline casings, roller-bearing bogies from dismantled steam locomotives of the "F-7" type, and steam generators. No performance data are available regarding the rebuilt locomotives.

New Headboards for Southern Region Trains

*Saving of labour in fixture and removal
and suitable for most types of locomotives*



Down "Bournemouth Belle" approaching Surbiton, showing new type of headboard on "Merchant Navy" class locomotive

UNTIL recently, headboards of varying styles have been carried by named trains on the Southern Region of British Railways. They were designed primarily to suit "Merchant Navy" and "West Country" class engines and were attached to the locomotives by means of lamp irons, bolts and wing nuts.

With these locomotives it is not practicable to employ the standard type of headboard in use in other Regions. Conversely, it is not as a rule possible to transfer these boards to classes of engines other than that for which the boards were designed in the first place.

To save labour in removal and change a new type of board has now been designed which takes the form of a rectangular plate cast in light alloy and with radiused corners. It is now standard on all named trains running in the Southern Region except the "Golden Arrow" and "Night Ferry," which will continue to use their existing and distinctive headboards. The plate engages the existing lamp irons placed at either side of the smokebox door at approximately boiler centre level. They can be attached at a moment's notice to practically any class of Southern Region locomotive or other types including the standard British Railways locomotives,

which are fitted with additional lamp irons for this Region.

An interesting development, initiated by the Public Relations & Publicity Department in conjunction with shipping companies, is the production of locomotive headboards on the same principle for boat trains between Waterloo and Southampton. These boards, which bear the name of each of the principal shipping companies, are in use on each relevant train. The combination of a rapid means of identification with attractive appearance should prove to be a helpful and popular feature with home and continental passengers.

RAIL FLAW DETECTION BY ULTRASONIC BEAM.—We are informed that the equipment used by London Transport for its detection of flaws in rails, reference to which was made in our July 10 issue, was supplied by the Equipment & Engineering Co. Ltd., 2 & 3, Norfolk Street, Strand, London, W.C.2.

NYLON DRIVING BELTS.—Lewis & Tylor Limited, manufacturers of Gripoly solid woven hair belting, has recently evolved, after some years of experimental work, a new belt consisting of a nylon core with an interwoven cotton cover. It is explained that since nylon is more elastic than cotton, one of the problems to be faced was the tendency for the core to stretch more than the cover. This was overcome by pre-stressing the nylon and weaving the cotton with a very high weaving angle so that it is free from tensile stresses when the belt is in operation. It is claimed that by this process it is possible to make the core considerably less in cross-sectional area than a normal belt, yet with greater strength.



The new headboards carried by (left) "Lord Nelson" and (right) "Merchant Navy" class locomotives. The circular type of board which will still be carried by the "Golden Arrow" and "Night Ferry" is shown in centre

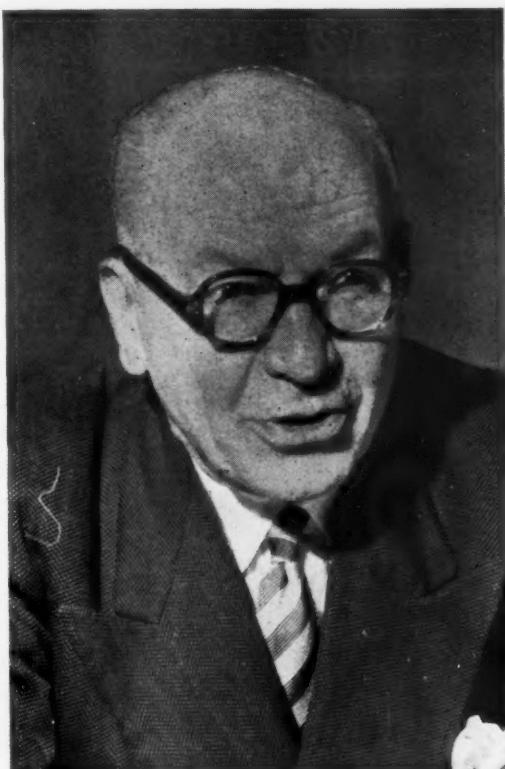
RAILWAY NEWS SECTION

PERSONAL

Mr. G. B. Howden, M.I.C.E., M.Inst.T., Chairman, Ulster Transport Authority, and until recently General Manager of the Great Northern Railway (Ireland), who has been appointed Chairman, and Senior Member for Northern Ireland of the Great Northern Railway Board, received his early training on the North British Railway, in Glas-

Boyne Viaduct at Drogheda about 20 years ago, which was carried out without interruption of traffic. During his term as Chief Engineer, responsible for both Civil and Mechanical Engineering Departments of the Great Northern Railway (Ireland), many notable improvements were effected in the provision of new passenger coaches, dining cars, buffet cars, and the remodelling of hotels, restaurants and refreshment rooms. The company's

Chairman of C.I.E. from 1945 to 1949. Mr. Reynolds, who is an accountant by profession, was born in 1895, and was educated by the Christian Brothers at O'Connell Schools, Dublin. He joined the firm of John R. Reynolds & Company, and later became Senior Partner in Reynolds, McCarron & Company. His interest in road and air transport led to his becoming Managing Director of the General Omnibus Co. Ltd., the largest of the in-



Mr. George B. Howden

Chairman, and Senior Member for Northern Ireland,
Great Northern Railway Board



Mr. A. P. Reynolds

Vice-Chairman, and Senior Member, Irish Republic,
Great Northern Railway Board

gow. After extensive experience on constructional and maintenance work he was, towards the end of 1926, appointed District Engineer on the Border District of the Scottish Area, L.N.E.R., with headquarters at Carlisle. In 1928 he was appointed Assistant Engineer, Scottish Area, in Edinburgh. In 1929, Mr. Howden took up the position of Chief Engineer, Great Northern Railway (Ireland). In 1933 he became responsible, in addition, for the Mechanical Engineer's Department, filling the dual position of Civil and Mechanical Engineer, until his appointment as General Manager of the company in 1939. After having acted for some time in an advisory capacity to the Board of Coras Iompair Eireann, Mr. Howden was also appointed as from June 1, 1950, General Manager of that company; he was thus in the unique position of being at the same time General Manager of two separate and important transport undertakings. One outstanding work undertaken by Mr. Howden was the reconstruction of the

road passenger and freight services were systematically developed in conjunction with its rail services and a fleet of 160 passenger and 130 motor-lorry vehicles was operated in districts as far apart as the Counties of Dublin and Donegal. The development of diesel railcars and railbuses on the Great Northern, which made substantial progress, was a feature of G.N.R.(I.) services in which Mr. Howden was very closely associated. At the time of the joint acquisition of the G.N.R.(I.) by the Government of Northern and Southern Ireland about 35 per cent of the scheduled passenger services operated by the company as well as a very considerable mileage of special train working was carried out by railcars. Mr. Howden became Chairman of the Ulster Transport Authority early this year.

Mr. A. P. Reynolds, who has been appointed Vice-Chairman, and Senior Member for the Irish Republic of the Great Northern Railway Board, was

dependent Dublin bus concerns which were acquired when a monopoly of passenger transport in the city was granted to the Dublin United Tramways Co. (1896) Ltd., afterwards the Dublin United Transport Co. Ltd. In 1936 he was appointed General Manager of the tramways company. He became Managing Director of the Dublin United Transport Co. Ltd. in 1941; and, early in the following year, he was appointed Chairman of the Great Southern Railways Company. When Coras Iompair Eireann was formed by the amalgamation of the Great Southern Railways Company and the Dublin United Transport Co. Ltd. Mr. Reynolds was appointed Chairman. He has been a member of the Government Advisory Committee on Aviation, and was associated closely with the establishment of the first regular air services between Ireland and England. He has also been a Director of Irish Air Lines. Mr. Reynolds resigned his position as Chairman of C.I.E. in 1949.

Mr. V. Hall, Chief Mechanical Engineer & Workshops Superintendent, Queensland Government Railways, who, as recorded in our August 7 issue, retired last June, entered the service of the railways in 1903 as a Cadet Engineer, and, on completion of his cadetship, was transferred to the Railways Mechanical Engineering Drawing Office, where he remained until the outbreak of the 1914-18 war. During the war he served with the Intelligence Section of the General Staff and as a pilot with the Australian Flying Corps. After the war he returned to the railway department as

issue, has been appointed Chief Mechanical Engineer & Workshops Superintendent, joined the Queensland Railways in February, 1920, as an Apprentice Fitter & Turner, and served an apprenticeship in the Ipswich Railway Workshops & Locomotive Running Depots. Until 1930, Mr. Castley was engaged on locomotive running work, and, from that year until 1935, he was employed as an Assistant Mechanical Engineer. During this period he carried out investigation, reorganisation and testing in connection with locomotives and other rolling stock. At various periods

1946, he was appointed Locomotive Engineer in charge of the Northern Division Railway system, being stationed at Townsville. In August, 1950, Mr. Castley was appointed Assistant to the Chief Mechanical Engineer & Workshops Superintendent, Ipswich, which position he held until appointed Chief Mechanical Engineer & Workshops Superintendent on July 1, 1953.

We regret to record the death, at Cambridge, on August 22, of Professor H. M. Hallsworth, C.B.E. From 1912 to 1934 he occupied the David Dale Chair of



Mr. V. Hall

Chief Mechanical Engineer & Workshops Superintendent,
Queensland Government Railways, 1943-53



Mr. W. A. Castley

Appointed Chief Mechanical Engineer & Workshops
Superintendent, Queensland Government Railways

a draughtsman and during the following nine years was engaged variously as draughtsman, Chief Draughtsman and Designing Engineer. Subsequently, he was required to institute and take charge of a production office for the main railway works. In 1940, Mr. Hall was appointed Assistant Chief Mechanical Engineer and, three years later, he became Chief Mechanical Engineer & Works Superintendent. During recent visits abroad on departmental business, Mr. Hall surveyed the latest ideas in diesel-electric locomotive workshops and the new shops to be built in Brisbane for this activity will be to the design recommended by him as a result of his American investigations. Mr. Hall is an associate member of the Institute of Engineers (Australia) and a member of the Institute of Locomotive Engineers (London).

Mr. W. A. Castley, Assistant to Chief Mechanical Engineer & Workshops Superintendent, Queensland Government Railways, who, as recorded in our August 7

Mr. Castley acted as Locomotive Foreman at the principal Queensland Locomotive Running Depot at Mayne. In 1935, he went to the headquarters of the Northern Division of the Queensland Railway in Townsville as First Grade Assistant Mechanical Engineer, this Division having two main workshops and eight locomotive depots. In 1939, Mr. Castley was one of five Queensland Railway Engineers selected to proceed to Great Britain in connection with the manufacture of Bristol Beaufort Aircraft in Australia. On his return to Australia his services were loaned to the Commonwealth Government for the initial planning and production of the first Bristol Beaufort Aircraft in Australia. After being engaged for twelve months on this work in Melbourne Mr. Castley was recalled to Queensland and placed as Engineer-in-Charge of Shift Working at the Ipswich Railways Workshops, where his responsibilities included not only the overhaul of rolling-stock but a number of defence projects. In 1943, he returned to the Northern Division Railways at Townsville, and, in

Economics at Armstrong College, University of Durham, and took the lead in organising a new Faculty of Commerce, which gave full recognition to railway studies as qualifying for the degree of Bachelor of Commerce. Professor Hallsworth lectured on Railway operating to large numbers of railwaymen and in other ways did much to ensure the success of the educational arrangements of the former North Eastern and London & North Eastern Railway Companies. He was an enthusiastic advocate of higher commercial education for railwaymen; 40 years ago *The Railway Gazette* published a vigorous article from his pen on this subject.

Mr. Hubert H. Scott, Assistant to the Vice-President of Traffic, Canadian Pacific Railway, has been appointed to the new post of Assistant Steamship Passenger Traffic Manager. Mr. Scott will be succeeded as Assistant Vice-President of Traffic by Mr. Barney Caplan, Chief Clerk to the Vice-President of Traffic.

Mr. H. W. Gillis, Freight Traffic Manager (Rates & Divisions), Montreal, Canadian Pacific Railway, retires on August 31.

Mr. Harry Arkle, Freight Traffic Manager over the Western Regions of the company, will succeed Mr. Gillis in the Montreal post which has system-wide jurisdiction.

Mr. W. M. Jamieson, Assistant Freight Traffic Manager in Winnipeg, will succeed Mr. Arkle.

We regret to record the death in Vancouver on July 26 of Mr. J. N. MacArthur, General Manager of the Northern Alberta Railways, 1938-50. Mr. MacArthur had completed 48 years' service with the Canadian Pacific and Northern Alberta Railways on his retirement in 1950.

The following appointments have been announced by Canadian National Railways:—

Mr. A. H. Ball, General Agent, Express Department, Montreal, becomes Superintendent of Road Transport (Truck), Central Region, for the newly-formed Road Transport Department.

Mr. L. J. Henderson, President and General Manager, Western Ontario Motorways, London, has been appointed Superintendent of Road Transport (Bus) at Toronto for the Central Region.

Mr. Charles C. Gillespie, Transport Economist, Moncton, becomes Superintendent of Road Transport for the Atlantic Region.

Mr. Walter G. Eyford, Traffic Supervisor, Winnipeg, has been appointed Superintendent of Road Transport, Western Region, Winnipeg.

The following administrative changes have been announced by the New Zealand Government Railways:—

Mr. W. E. Worsfield, Staff Superintendent, has retired. The position of Staff Superintendent has been replaced by that of Personnel Manager, in which capacity Mr. W. F. Gill succeeds Mrs. Worsfield.

Mr. G. Fairbairn, Comptroller of Stores, has retired. He has been succeeded by Mr. I. S. Johnston.

Mr. K. G. Reid has been appointed Chief Staff Officer, and Mr. N. L. Stevenson becomes Chief Industrial Officer. These are new positions.

We regret to record the death on August 24, at the age of 77, of Mr. David Wilson Smyth. Mr. Wilson Smyth was one of the first members of the Northern Ireland Transport Board, and, when that organisation was succeeded by the Ulster Transport Authority, he was appointed a member, later becoming Vice-Chairman.

We regret to record the death on March 31 of Mr. W. Russell, District Engineer, Perth, 1949-53. A photograph and biographical details of Mr. Russell, who retired on March 31, appeared in our April 24 issue.

Mr. K. G. Sharp, Assistant Blast-Furnace Manager of the Steel Company of Wales Limited, has been appointed Blast-Furnace Superintendent at the Margam Works of the company.

Lt.-Colonel I. A. Marriott has relinquished the Managing Directorship of Parsons Engineering Co. Ltd.

We regret to record the death of Mr. F. P. Coates, Managing Director of North Central Wagon & Finance Company.

New York Rapid Transit Projects

New underground connections to replace elevated lines; possible adoption of passenger conveyor system; urgent need of rolling stock

The railways forming part of the New York City Transit System total 727 track miles, over which operate 6,734 cars. More than 1,500 million passengers were carried last year, three times as many as those carried by all Class I railways in the United States.

The most important constructional project is the Second Avenue Trunk line, intended to connect existing lines and provide additional capacity in the central area for trains for which there is already sufficient capacity in the suburbs. It comprises an underground line beneath Second Avenue, Manhattan, with connections to the Pelham line in the Bronx on the north; to IND (Independent Subway) and BMT (Brooklyn-Manhattan Transit) lines in the vicinity of Canal and Houston Street on the south; to the IND Sixth Avenue line on the west, by a line under 57th Street; and to Queens on the east by a line under the East River near 70th Street, Manhattan, to join the Long Island Rail Road, whose Rockaway line the Board is taking over.

The Second Avenue scheme will entail the construction and equipment of 71 track-miles of line and require 650 new coaches. The acquisition and improvement of the Rockaway line will cost the city some \$54,000,000, of which new earthworks, bridges and permanent way will absorb \$9,000,000 and re-signalling nearly \$10,000,000.

Passenger Conveyor System

The undertaking is studying the application of a passenger conveyor system, mentioned editorially in our December 19, 1952, issue. A working model of such a system designed specifically for the Grand Central-Times Square shuttle has been exhibited. It is considered that this equipment could be installed in the existing tunnels at a cost of 60 per cent of standard equipment and operated at about 40 per cent of the cost of the present shuttle service.

In the view of Colonel S. H. Bingham, Chairman of the New York Board of Transportation, who reviewed the expansion plans of the board in a recent address to leading New York electrical engineers, the passenger conveyor is the "prototype of the greatest advance in mass transportation we have seen in many years," adapting for passenger transport the high-capacity, low cost methods of conveyor transport which have been successfully developed for manufacturing, mining, and construction.

The connection between the BMT 60th Street tunnel and the IND lines in Queens will be ready for operation in the autumn of 1954. At about the same time the connection of the BMT Culver line with the IND Division will be completed, enabling IND trains to work through to Coney Island. In 1955 completion of the connection between the Fulton Street line of IND and that of BMT will enable three miles of elevated structure to be demolished.

Rolling Stock Needs

A total of 300 new coaches will be required—100 for each scheme. These and other schemes bring to 370 the total of new coaches of BMT-IND type, 60 ft. long and 10 ft. wide, which the Board will have to order by the end of 1955.

Eighty more of the IRT type will be required when platform lengthening is completed on the Flushing line.

Colonel Bingham considers that present-day conditions call for an underground coach which can be operated economically and safely with a minimum of maintenance and inspection, that will readily maintain high schedule speeds and have an economic life of perhaps no more than 20 years, with correspondingly low capital and maintenance costs. If New York were to determine to replace its underground cars as they became 40 years old, 3,020 cars in replacement would be needed in the next ten years; counting also extra stock needed for the extensions, such a programme would cost over \$30,000,000 a year, yet Colonel Bingham believes it to be essential to the proper organisation and maintenance of the system.

The private companies which built and operated the rapid transit lines in New York began to find themselves in financial straits after the first world war when prices and labour costs went up. Hamstrung by the five-cent fare written into their contracts with the city and, after the early 1920s, when unification and ownership by the city began to be discussed, lacking incentive to put in additional money for replacements or modernisation, the companies made only expenditures which promised an immediate return. After unification came in 1940, the country entered the war and neither men nor materials could be made available for long-deferred schemes for expansion and modernisation. Although since the war, and in spite of the difficult financial situation of the city, large sums have been spent, there is a great accumulation of work which must be carried out to bring the system up to really modern standards in equipment, maintenance and operation.

BROOMHOUSE PUBLIC SIDING.—Broomhouse public siding, on the Bothwell branch line of the Scottish Region, was entirely closed for traffic on September 1. Alternative rail facilities are available at Mount Vernon South station.

MULLARD EXHIBITS AT OLYMPIA.—Electrochemical, electronic, and ultrasonic equipment is exhibited by Mullard Limited at the Engineering and Marine Exhibition being held at Olympia, London, W.14, September 3-17. The equipment will include conductivity controller type E7567 for checking chemical or concentration changes in boiler water condensates, brines and so on, and an electronic controller type E7594 for controlling water baths and similar apparatus to within $\pm 0.02^\circ$ C. Also exhibited will be Mullard electronic speed stabilisation inverter equipment, developed for controlling precisely the speed of induction motors; and an ultrasonic reciprocating bench drill in which a high-frequency magneto-striction transducer is used to generate vibrations at about 22 kc/s. The vibrations are transmitted by a tapered metal stub to a drilling tip; the tapered stub acts as a step-up velocity transformer. It is said that a $\frac{1}{4}$ in. square hole can be cut $\frac{1}{8}$ in. deep, in glass, ceramics and similar materials in one minute.

British Transport Commission Statistics (Period No. 7)

Summary of the principal statistics for the four-week period ending July 12

STAFF

—	B.T.C. Head Office	British Railways	London Transport	British Road Services	Road Passenger (Provincial)	Hotels & Catering	Ships & Marine	Inland Waterways	Docks, Harbours, Wharves	Railway Clearing House	Commer- cial Adver- tisement	Legal	Films	Total
Number ...	284	602,932	96,186	69,923	63,010	16,821	6,476	4,743	21,006	535	200	330	41	882,487

BRITISH TRANSPORT COMMISSION TRAFFIC RECEIPTS

—	Four weeks to July 12		Aggregate for 28 weeks	
	1953	1952	1953	1952
	£000	£000	£000	£000
British Railways—				
Passengers ...	11,192	10,749	57,615	55,832
Parcels, etc., by passenger train	3,056	2,796	20,153	18,869
Merchandise ...	8,230	7,978	57,610	57,047
Minerals ...	3,438	3,131	24,522	22,463
Coal & coke ...	8,271	7,604	59,421	55,174
Livestock ...	172	157	1,093	838
Total British Railways ...	34,359	32,415	220,414	210,223
British Railways, C. & D., etc. ...	923	883	6,254	6,140
British Road Services ...	6,275	5,851	42,228	41,519
Provincial & Scottish Buses ...	4,471	4,328	25,111	23,897
London Transport—				
Railways ...	1,343	1,395	9,652	9,493
Buses & coaches ...	3,221	3,241	21,361	20,563
Trolleybuses & trams	703	767	4,866	5,200
Total London Transport ...	5,267	5,403	35,881	35,256
Ships ...	1,241	1,219	5,381	5,475
Inland Waterways : Carrying ...	75	62	501	475
Total Passengers ...	21,627	21,166	120,934	117,291
Total Freight, Parcels & Mails ...	30,984	28,995	214,836	205,694
Inland Waterways : Tolls, etc. ...	107	102	740	726
Docks, Harbours, etc. ...	1,404	1,324	8,716	8,629
Hotels and Catering—				
Hotels ...	485	474	2,966	3,035
Restaurant cars ...	269	255	1,548	1,535
Station refreshment rooms	705	641	4,276	3,872
Total Hotels & Catering ...	1,459	1,370	8,790	8,442
TOTAL ...	55,581	52,957	354,016	340,782

LONDON TRANSPORT

—	Passenger journeys	Inc. or dec. per cent. over 1952	Car miles	Inc. or dec. per cent. over 1952
Railways ...	000 44,439	+ 4.7	000 16,576	- 1.6
Buses & coaches ...	231,574	+ 1.6	27,822	+ 1.1
Trams & trolleybuses ...	58,065	- 5.1	5,761	- 6.8
Total ...	334,078	+ 0.7	50,159	- 0.8

INLAND WATERWAYS

Tonnage of traffic and ton miles

—	Tonnage	Inc. or dec. per cent. over 1952	Ton miles	Inc. or dec. per cent. over 1952
Coal, coke, patent fuel & peat	000 562	+ 11.8	000 8,373	+ 22.6
Liquids in bulk ...	138	- 3.8	3,807	- 2.1
General merchandise ...	327	+ 5.0	4,843	+ 0.2
Total ...	1,027	+ 7.3	17,023	+ 9.4

BRITISH RAILWAYS

Rolling Stock Position

—	Operating stock	Number under repair	Available operating stock	Available stock in 1952
Locomotives ...	18,683	3,030	15,653	15,919
Coaching vehicles ...	57,241	4,648	52,593	53,000
Freight wagons ...	1,120,727	85,059	1,035,668	1,024,442

BRITISH RAILWAYS

Passenger Journeys (Month of May, 1953)

Full fares	Excursions, cheap day, etc.	Other descriptions	Early morning and workmen	Season tickets	Total	Inc. or dec. per cent. over 1952
19,310,000	22,384,000	4,242,000	15,903,000	15,770,000	77,609,000	+ 1.5

BRITISH RAILWAYS
Freight Tonnage Originating and Estimated Ton-Miles (Period No. 7)

—	Merchandise	Minerals	Coal & coke	Livestock	Total	Inc. or dec. per cent. over 1952
Tons originating ...	000 3,747	000 5,017	000 13,388	000 49	000 22,201	+ 2.4
Ton-miles ...	517,887*	393,841	830,662	—	1,742,390	+ 3.5

* Includes livestock

BRITISH RAILWAYS (Period No. 7)

—	Total steam coaching train-miles	Total electric coaching train-miles	Total freight train-miles	Freight train- miles per train engine-hour	Net ton-miles per total engine-hour	Locomotive coal consumption	
						Total tons	Lb. per engine-mile
1953 ...	15,894,000	3,908,000	10,814,000	8.99	630	993,000	57.8
1952 ...	15,438,000	3,857,000	10,790,000	9.1	611	994,000	58.3

British Transport Commission (Executives) Order, 1953

The British Transport Commission (Executives) Order, made by the Minister of Transport, Mr. Alan Lennox-Boyd, on August 19 and coming into operation on October 1, states:—

"The Minister of Transport in exercise of the powers conferred upon him by Section 5 of the Transport Act, 1947, as extended by Section 25 of the Transport Act, 1953, and of all other powers him enabling in that behalf and after consultation with the British Transport Commission (hereinafter referred to as "the Commission") hereby makes the following Order:—

"1.—(1) This Order shall come into operation on the 1st October, 1953, and may be cited as the British Transport Commission (Executives) Order, 1953.

"(2) The Interpretation Act, 1889(c), shall apply to the interpretation of this Order as it applies to the interpretation of an Act of Parliament.

"2. As from the coming into operation of this Order, there shall be one Executive only, namely, the Executive known as the London Transport Executive, and accordingly the functions previously exercisable by the Executives known respectively as the Railway Executive, the Road Haulage Executive, the Docks and Inland Waterways Executive, and the Hotels Executive (hereinafter referred to as "the Executives") shall become directly exercisable by the Commission.

"3. The following transitional provisions shall have effect, namely:—

"(a) where any legal proceedings or applications to any authority are pending immediately before the 1st October, 1953, by or against the Executives or any of them those proceedings or applications shall be continued by or against the Commission;

"(b) on and after the 1st October, 1953, legal proceedings to enforce a cause of action which has accrued before that date to the Executives or any of them or to any person against the Executives or any of them shall be instituted by or against the Commission; and

"(c) all rights, powers and liabilities

of the Executives which were in force immediately before the 1st October, 1953, shall on and after that date be treated as rights, powers and liabilities of the Commission, and accordingly any reference in any statutory provision, or in any contract or document passed or made before the 1st October, 1953, to the Executives or any of them shall be construed on and after that date as a reference to the Commission."

Crompton Parkinson Diesel-Electric Shunters

Predecessors of British Railways units for which power units are now being built

The recent order for ten diesel-electric shunting locomotive power equipments placed by the Railway Executive with Crompton Parkinson Limited recalls the fact that this firm supplied equipments for use on the London Midland & Scottish Railway as far back as 1935. The 10 locomotives then supplied, which were built by Armstrong Whitworth, were of the jack-shaft drive type and fitted with double-reduction gearing and forced ventilation for the traction motor. In these two features, these locomotives were in advance of other designs in operation at that time. The control desk of these early locomotives, also, bears a marked resemblance to the control equipment used on British Railways in recent years.

These ten original locomotives were taken over by the Ministry of Supply at the beginning of the war and were used for various purposes at home and overseas. Four were ultimately handed over to the Belgian National Railways, on which they are still operating. Of the remainder, no exact history is available, but various units

are heard of from time to time operating in different parts of the world.

The equipments now on order differ from the early design in that each will have two traction motors with double reduction gearing. The engine is a Crossley type ESNT6/90, developing 350 b.h.p. at 825 r.p.m. The generator is a single-bearing machine with a belt-driven exciter. A 40-cell lead acid battery of Crompton Parkinson manufacture, having a capacity of 138 a.h., will be fitted. As in the case of the earlier locomotives, the control gear is of Allen West design and manufacture.

Observance of Signalling Regulations

Statement by Railway Executive

The following statement was issued by the Railway Executive on August 28:—

"The Railway Executive states authoritatively today that the signalling arrangements on British Railways are carefully and meticulously observed throughout the country.

"The signalling organisation provides continuous effective supervision over the work, and it would be quite wrong to draw any general conclusions from the recent isolated case at Manchester. That particular case will be the subject of a report by the Ministry of Transport Inspecting Officer, and when it is received, it will immediately receive careful attention by the railway authorities.

"In the meantime, Sir Michael Barrington-Ward, Member of the Railway Executive responsible for train operating matters, is following up with the Chief Regional Officers to obtain a definite assurance that there is no laxity in the daily work of signalmen in any respect and that signalling inspectors and all others responsible for supervising this important work are seeing that the rules and regulations are carried out."

Signing the G.N.R.(I) Purchase Agreement



Photo]

Mr. W. V. McCleery, Northern Ireland Minister of Commerce, showing the agreement to purchase the Great Northern Railway (Ireland) which he signed with Mr. Sean Lemass (seated left), the Republic of Ireland Minister of Commerce, to Lord Glenavy (immediately behind Mr. McCleery), Chairman, G.N.R.(I)

[*The Northern Whig*]

ANTI-VIBRATION MOUNTINGS.—The many uses to which rubber is being put for anti-vibration mountings in the engineering and chemical industries are demonstrated at the British Rubber Development Board stand at the Engineering & Marine Exhibition at Olympia. A notable exhibit is a railway carriage in section illustrating the application of rubber for construction purposes and for upholstery. A comprehensive selection of literature is available, covering many functions of rubber in various forms of engineering.

Lord Hurcomb's Farewell Message

Lord Hurcomb, Chairman of the British Transport Commission, who retired at the end of last month, has addressed the following message to the staff of all the Commission's undertakings:—

"It is six years since I was appointed Chairman of the British Transport Commission, charged with the duty of giving effect to the Transport Act of 1947. During that period we have together seen many changes in the shape of inland transport, which must continue to develop.

"In those years I have derived great personal encouragement and pleasure from the support and friendliness which I have received from my colleagues and the staffs in all sections of our undertaking, and now that I am retiring, upon the expiration of my term of office, I convey to them through this message my sincere thanks and appreciation for their loyalty and co-operation.

"When the Commission took over, in 1948, all branches of transport were suffering badly from the prolonged stress of the war, and the task of rehabilitation made heavy demands upon time and energy. A good deal still remains to be done, but every section of our undertaking is in much better shape than it was in 1947, thanks to the efforts of you all, and much thought has also been given to the lines of future development.

"I have spent the whole of my working life in the public service, and most of it in transport. Whatever the precise form that our national system of inland transport may ultimately assume, efficient service at the lowest real cost to the nation's economy must continue to be its aim, an aim to be steadily pursued by all who are engaged in directing and serving British Transport in the Commission's great undertaking.

"I am sure that you will accord to my successor the support which you have given me, and I wish you all much happiness and prosperity."

Regular-Interval Departures on Glasgow Suburban Services

An important new feature of the Scottish Region winter timetable in force from September 21, is the reorganisation of services in both directions on the Glasgow, Cathcart Circle, lines on the basis of regular-interval departures. The departure times from Glasgow Central now are standardised.

The application of time interval services has proved to be popular and of great help to passengers by intensive services. The system of regular-interval departures is applied to some extent on the Glasgow Queen Street and Edinburgh Waverley section, but this is the first occasion British Railways have introduced it for suburban lines in the Scottish Region.

The services will be at half-hourly intervals, the Inner Circle via Maxwell Park trains leaving Glasgow Central at the hour, and the Outer Circle via Queens Park at the half-hour. Some variation of strict interval at intermediate stations is unavoidable, but the services throughout correspond very nearly to the intervals which apply at Glasgow, with extra trains at peak periods.

Adjustments to Other Services

Some adjustment has been necessary to the timing of train services to and from other districts situated to the south of the

city which converge on the Cathcart Circle lines, such as Williamwood and Uplawmoor, and Croftfoot and Kirkhill; the variations in the timings so affected are not extensive.

Other routes are being examined with a view to regular-interval services to meet changing public requirements, and on a basis which may help in the ultimate reduction of the present congestion on the road approaches to the centre of Glasgow.

Advantages in the re-arranged services are: (a) Passengers travelling between Glasgow Central and points nearly equidistant on the Circle lines such as Cathcart and Pollokshaws East have a regular half-hourly service to and from the city; (b) long intervals in the present timetable will be reduced, i.e., the present Inner Circle line has no service between 9.45 a.m. and 12.8 p.m. but the new schedule will provide trains at 10 a.m., 11 a.m., 12 noon, 2.30 p.m., 3.30 p.m. and 9.30 p.m.; and (c) the necessity for reference to timetables is greatly reduced as the services from Glasgow Central to, say, Queens Park will be at each half-hour, and, say, to Maxwell Park at each hour.

Staff & Labour Matters

Claim by D.I.W.E. Railwaymen

The N.U.R. and T.S.S.A. on August 27 presented their claim to the Docks & Inland Waterways Executive for a 15 per cent increase in rates of pay for employees of that Executive covered by agreements with those unions. The Executive undertook to consider the union arguments and give its reply.

HEAVY TRAFFIC BY "STARLIGHT SPECIALS."—On Friday and Saturday last, 23 "Starlight Special" trains carried 8,057 passengers between London and Scotland, and nearly 200,000 passengers travelled from the principal London termini in 540 long-distance trains on Saturday.

GEORGE COHEN SONS & CO. LTD.—Preliminary figures (subject to audit) of George Cohen Sons & Co. Ltd. show combined profits before taxation of £1,764,760. The group net profit, after taxation, of £468,604 compares with £714,270 in the previous year. The directors recommend a final dividend for the year to March 31 last on the ordinary capital of £1,500,000, or 8½ per cent, making a total distribution for the year on the increased capital of 12 per cent.

WICKMAN LIMITED.—A substantial order book for machine tools is reported by Sir Stanley Rawson, Chairman of Wickman Limited, in the statement issued with the report and accounts. The statement comments on the remarkable progress made by multi-spindle automatics of the company's own manufacture, which are stated to be finding an increasing number of new applications, both at home and abroad. Further machines in the six-spindle range have been introduced and have undergone extended and searching trials in the company's own and their customers' works. Further investment has been made during the year in the overseas companies in South Africa and Australia. An increasing number of the company's machines has been installed in these countries and it has become essential to have available service personnel and equipment for the design and installation of high grade tooling.

Contracts & Tenders

Waggonfabrik Talbot, Aachen, has received a contract for 20 upper class coaches, type BUC, for the Burma Railways.

Rhodesia Railways have placed an order for eight four-wheel dairy wagons with C. M. Hill & Co. (Engineers) Ltd., 44-45, Tower Hill, London, E.C.3, on behalf of its Belgian principals, S.A. des Ateliers de Construction de Familleureux.

The Pennsylvania Railroad has placed orders with the Pullman-Standard Car Manufacturing Company for three hundred 70-ton covered hopper wagons for carrying bulk cement, sand, lime and other materials which must be protected from weather.

The wagons, to cost approximately \$2,300,000, will be built by the company at its Butler, Pennsylvania, Works. Deliveries will be completed early next year. The Pennsylvania will then have a fleet of 2,526 two-pocket wagons of this type, the largest such fleet of any railway in the United States.

The Siemens and General Electric Railway Signal Co. Ltd., has been awarded the contract for the supply and installation of colour-light signalling on the Glasgow Central Low Level lines of the Scottish Region between Partick Central and Strathclyde Junction, and including the branch lines from Stobcross Junction and Bridgeton Cross Junction to Kelvinbridge and Parkhead Stadium respectively.

Two existing signalboxes are to be modernised and will be controlled by mechanical lever frames in conjunction with relay interlocking control panels. The signals will be operated from individual thumb-switches, located at their geographical position on the panels.

The material to be supplied and installed includes the provision of two relay interlocking control panels and associated equipment, lever locks and circuit controllers, plug-in type relays, relay racks, etc., at Stobcross, and Bridgeton Cross Junction boxes.

All relays will be of the latest S.G.E. plug-in type including interlocking relays. There are 56 continuous a.c. track circuits of the single and double rail type, condenser fed with double element plug-in type vane track relays. Main running signals will be colour-light multi-aspect and shunt signals of the position light type.

All main running signals will be provided with signal post telephones operating on a central battery system with individual line wires, enabling apparatus in the tunnel areas to be as simple as possible. The contract includes the supply and installation of all signal post telephone equipment including batteries and charging equipment.

British Railways, Eastern Region, have placed the undermentioned contract:—

Tersons Limited, London, N.3 : renewal of permanent way in the Kings Cross district.

British Railways, North Eastern Region, have placed the following contracts:—

Cowans, Sheldon & Co. Ltd., Carlisle : one 57-ft. locomotive turntable at Leeds (Holbeck) No. 2 Shed

C. R. Price, Doncaster : reconstruction of locomotive shed roof, Motive Power Depot, Sunderland South Dock

Fram Re-inforced Concrete Co. Ltd., Man-

chester : reconstruction of roof and cable ends, York Wagon Works Stores

Berwick Building Company, Berwick-on-Tweed : construction of a retaining wall and resurfacing of cattle dock at Acklington

The High Commissioner for India invites tenders for the supply of wheels and axles for the Indian railways. Full particulars are given under Official Notices on page 279.

The Director General of Supplies & Disposals, Railway Stores Directorate, New Delhi, is inviting tenders for:—

145 coupler, hook end complete with spring and inside casing.

145 coupler, yoke end complete with springs and inside casing.

Tenders are to be submitted to the Director General of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi, quoting reference SRI/16594-D/III, by September 16.

The Director General of Supplies & Disposals, Railway Stores Directorate, New Delhi, is inviting tenders for:—

400 drawhooks dead soft steel or class I steel

Tenders are to be submitted to the Director General of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi, quoting reference SRI/16587-D/III, by September 24.

The Special Register Information Service of the Export Services Branch, Board of Trade, reports that the United Kingdom Trade Commissioner at Johannesburg has notified a call for tender No. C.6554, which has been issued by the South African Railways for:—

352 complete trainlighting dynamos and control equipments

Capacity of equipments : 65 amps. at 30 volts

100 sets of gauges, spanners and screwdrivers.

200 manuals

One complete set of Velograph tracings

One specified spare parts

The closing date for receipt of tenders is September 17. Tenders should be enclosed in a sealed envelope with the inscription on the outside "Tender No. C.6554: Trainlighting Dynamos and Auxiliaries," and addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg, to arrive not later than 9 a.m. on that day.

A copy of the tender documents, giving full details of the items required, may be inspected in Room 801 at Lacon House, Theobalds Road, W.C.1, until September 10, after which date it will be available on loan to United Kingdom firms in order of application.

The Director General of Supplies & Disposals, Railway Stores Directorate, New Delhi, is inviting tenders for the following:—

6,400 axlebox guard groove liner steel, Class II

Half of the order is to be delivered immediately and the other half by March 15, 1954. Tenders are to be submitted to the Director General of Supplies & Disposals, Shahjahan Road (Section SRI), New Delhi, quoting reference SRI/1718 4-C/1(RP). They will be received up to 10 a.m. on September 18 and opened at 11.30 a.m. on that day.

Notes and News

Railway Mechanical Engineer Required.—

Applications are invited for the post of railway mechanical engineer, under 30 years of age, required by manufacturers of specialised equipment used in all types of motive power and rolling stock. See Official Notices on page 279.

General Mechanical Draughtsman Required.—Applications are invited for the post of general mechanical engineering draughtsman, for the design of railway track maintenance machinery, required by an engineering firm in East Lancashire. See Official Notices on page 279.

Welding Design Courses.—Courses on the design of welded structures organised by the constructional design department of the Quasi-Arc Co. Ltd. are again being arranged in various parts of the country as a result of the demand last year. On the North East coast for the Newcastle course in October last year, 95 students enrolled. A further course has been arranged, and this will be held at the Cleveland Technical Institute, Middlesbrough, commencing October 27. The lectures will be given from 6.7.30 p.m. on Tuesday and Wednesday evenings over a period of seven weeks, and guest speakers include Mr. R. J. Fowler, consulting engineer, and Mr. E. Ibbotson, of Dorman Long & Co. Ltd. Further details of the course, together with enrolment forms, can be obtained from the Constructional Design Department, the Quasi-Arc Co. Ltd., Bilton, Staffordshire.

Railwaymen Reservists in Camp.—The annual camp of 19 Railway Group, R.E. (A.E.R.) was held at the Transportation Training Centre, Longmoor, Hants., from June 14—July 12. For the first fortnight 153 Railway Traffic Squadron, 157 Locomotive Running Squadron, and 2 Railway Telegraph Squadron were in camp; 150 and 608 Railway Maintenance Squadrons and 159 Railway Survey Squadron had the second fortnight; 155 Railway Workshop also was in camp during the second fortnight. An exercise in military railway operating was successfully carried out by 153, 157, and 2 Squadrons. On the construction and workshop side,

the training exercises included end-on platelaying and bridging work. General Sir Ronald Scobie visited the training centre whilst the Group was in camp and presented Coronation medals at a ceremonial parade. Visits were also made by Mr. T. F. Cameron, Chief Regional Officer, Scottish Region, Mr. R. F. Harvey, Chief Officer (Motive Power) Railway Executive, Mr. T. E. Chrimes, Motive Power Superintendent, Southern Region, Mr. J. I. Campbell, Civil Engineer, Eastern Region, and Mr. P. S. A. Berridge, Assistant Engineer, Western Region.

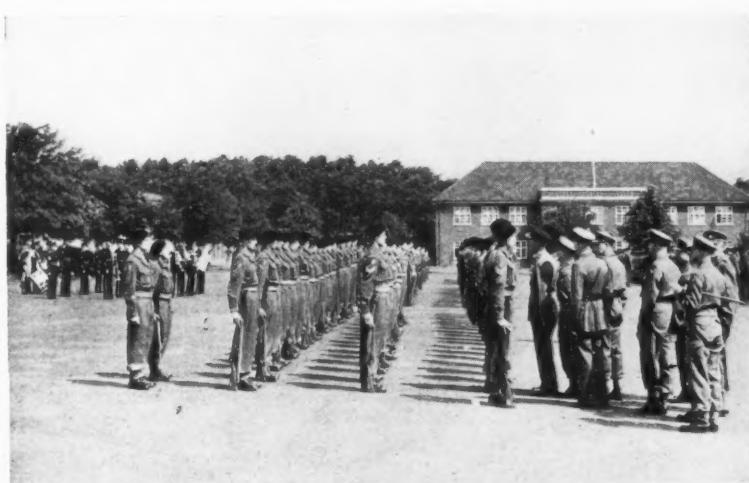
British Railways (Southern Region) Lecture & Debating Society.

At the opening meeting on Wednesday, October 7, of the British Railways (Southern Region) Lecture & Debating Society, Mr. F. E. Campion, Regional Civil Engineer, will give an illustrated lecture entitled "Engineering Problems Created by Kent Coast Flooding." The President of the Society, Mr. C. P. Hopkins, Chief Regional Officer, will be in the chair.

Auction of Belfast & County Down Plant.

—Engineering equipment and woodworking plant of recently dismantled sections of the Belfast & County Down Railway was auctioned in Belfast recently. Sixty-three lots from the locomotive shops, boiler shop, brass shop, wagon shop and gas house—all machinery—fetched £2,000. The highest price was £510, for a large quantity of scrap metal, including second-hand coupling brake blocks. An oil gas-producing plant was sold for £180. The sale will be conducted in stages extending over a year at least.

Strengthening Sea Wall on Chester—Holyhead Line, L.M.R.—A £23,000 scheme will strengthen the mile-long wall which protects the Chester—Holyhead main line of London Midland Region from the sea at Llanfairfechan. Modern methods to counteract sea action are to be applied. Dwarf concrete walls, bedded in the clay and shingle to a depth of 4—5 ft., forming rectangles 40 ft. long by 12 ft. wide are to be introduced. These rectangles are filled in with ordinary stone pitching but without the smooth level topped face of the previous methods. Large block quarry stones will be used. On the North Wales



General Sir Ronald Scobie, Colonel Commandant, Royal Engineers, inspecting 2 Railway Telegraph Squadron, R.E., at the Transportation Training Centre, Longmoor, on June 20

coast between Holywell and Llanfairfechan regular sea coast maintenance gangs are employed throughout the year and a tide watching scheme is immediately brought into operation when the predicted height of tides or high winds make precautions necessary. The work at Llanfairfechan will take a year.

"London on Wheels" Exhibition Extended.—The British Transport Commission announces that in response to many requests the period of opening of the "London on Wheels" exhibition in the Shareholders' Meeting Room at Euston, is being extended until January 30, 1954. The prices of admission have been reduced to 6d. for adults and 3d. for children.

Inquest on Irk Valley Viaduct Accident Fatalities.—Verdicts of accidental death were returned on August 27 at the conclusion of the inquest at Manchester on 10 persons killed in the Irk Valley Viaduct accident, L.M.R., of August 15 (see our August 21 issue). In his summing up the Coroner said that as far as he could see there had been a breach of regulations by three signalmen, and by the driver of the electric train. The jury added to their verdict the rider that: "We find negligence in the observance of the regulations on the part of the signalling staff, both active and supervisory, and to a lesser degree by the driver of the electric train.

Wolf Heavy-Duty High-Speed Grinder.—A new 6-in. portable electric heavy-duty grinder, type GQ6, has been added to the range of electric tools manufactured by Wolf Electric Tools Limited. It is powered by a motor, specially designed and developed by the firm, which gives a peripheral speed on the grinding wheel of 8,800 ft. per min. It is fitted with a fast-cutting resinoid bonded wheel and the wheel guard is a heavy gauge steel pressing for maximum safety. Ordinary vitrified wheels should not be used with this model. Heavy-duty ball bearings inserted in steel liners integral with castings are fitted throughout. The helical gears are resiliently mounted to absorb shock stresses. The armature is dynamically balanced to precision limits and insulation is flash

tested to 1,250 V. Applications for the machine include heavy weld dressing, fettling, general foundry grinding, and railway and mine repair work.

British Railways (Western Region) London Lecture and Debating Society.—At the opening meeting of the British Railways (Western Region) London Lecture and Debating Society, to be held in the Headquarters Staff Dining Room, Bishop's Bridge Road, Paddington, W.2, on Thursday, October 1, at 5.45 p.m., the speaker will be the Rt. Hon. A. T. Lennox-Boyd, M.P., Minister of Transport.

British Railways' Coal Traffic Up Again.—For the second week running British Railways' deep-mine and opencast coal carryings are up on the corresponding week of 1952. A total of 3,064,410 tons were cleared during the week ended 6.0 a.m. on August 31, compared with 2,942,050 tons last year. The week-end figure was 321,810 tons. During the week ended August 22, 201,338 tons of iron and steel from the principal steel works and 316,000 tons of iron ore were conveyed.

Keith Blackman Exhibits at Olympia.—A large selection of Tornado fans, blowers, and other equipment is displayed by Keith Blackman Ltd., at the Engineering & Marine Exhibition being held at Olympia, London, September 3-17. The exhibits include standard and insulated fans; in the insulated type the motor chamber is lined with asbestos to deal with duct temperatures up to 350 deg. F. Other exhibits include a portable 30 in. fan for cooling kilns, annealing furnaces, cupolas, and so on, during maintenance, having a capacity of 15,000 c.f.m.; and a steelplate 24 in. blower for cupola oil and gas-fired furnaces and so on, together with dust collecting equipment and steam heated and gas-fired unit heaters having a capacity of 144,000 and 90,000 B.T.U. per hr. respectively.

The Atom in Harness.—Shell-Mex and B.P. Limited held a preview of a documentary film entitled "Project 074" at Shell-Mex House, Strand, London, W.C.2, on September 1. The film depicts a new research technique for using radio-active

tracers for the measurement of engine wear. It was introduced by Mr. H. Cunliffe, Assistant General Sales Manager, Industrial. The method is shown of measuring piston ring and engine cylinder, the top ring being radio-active. Debris from the irradiated ring finds its way into the lubricating oil, and gamma rays produced by its radio-active iron in the oil are detected by means of a scintillation counter, of which the output pulses are passed to a rate-meter, which displays the mean rate arrival of the voltage pulses and, therefore, a measure of the radio-activity in the oil. The film is being shown eight times daily at the Engineering & Marine Exhibition at Olympia, and will shortly be available through the Shell-Mex film library.

Cowal Highland Gathering at Dunoon.—To convey passengers to and from Cowal Highland Gathering on August 29, British Railways, Scottish Region, arranged thirteen special steamer sailings to and from Dunoon, additional to the ordinary advertised services. Four were from Gourock to Dunoon, seven from Dunoon to Gourock, and two from Dunoon to Craigendoran. Relief trains also were run between Glasgow and the respective railheads.

Morgan Crucible Company Results.—The report for the year ended March 31 of the Morgan Crucible Co. Ltd. reveals a gross shrinkage in group profit of about £400,000 after providing more than £100,000 for stock obsolescence, and a net decline, after tax, of about £150,000. Net worth of the company increased by £470,000, net current assets accounting for £400,000, the remainder being mainly represented by the net increase on plant expenditure after normal provision for depreciation. Stockholders' funds are more than twice the value of the capital subscribed, and proposed dividend is 2.8 per cent of those funds as against 10.3 per cent earned.

East Indian Railway Annual Dinner.—The fiftieth annual dinner of the East Indian Railway Officers' Association will take place at the Connaught Rooms, Great Queen Street, Kingsway, London, W.C.2, on Wednesday, September 23. The chair will be taken by Sir Hugh Hannay. 1953 is not only the jubilee of the association but the centenary of the Indian railways, and the committee hopes there will be a good gathering. It will be followed on Thursday, September 24, by the annual reunion tea party for members, their wives and families, at the St. Ermin's Hotel, Caxton Street, S.W.1. Full details of both functions may be obtained later from the Honorary Secretary, Mr. R. C. Harvey, Messrs. Rendel, Palmer & Tritton, 125, Victoria Street, S.W.1, telephone number Victoria 8494, extension 37.

Nitrate Railways Co. Ltd.—The revenue accounts and balance sheets of the Nitrate Railways Co. Ltd. for 1950 and 1951 have now been published, but it is pointed out that in consequence of the temporary working of the system by the Chilean State Railways in 1945, and the current negotiations under Decree 435 of February 25, 1951, the accounts do not represent a full and complete statement of the company's financial position. They show an adverse balance on revenue account at December 31, 1951, of £102,655 to be carried forward. Recent advices from Santiago indicate some progress towards implementing the Decree. The Chilean State Railways have exercised their option



The Wolf heavy-duty grinder, type GQ6, fitted with a special wheel, fettling a brake drum casting

OFFICIAL NOTICES

The engagement of persons answering Situations Vacant advertisements must be made through a Local Office of the Ministry of Labour or a Scheduled Employment Agency if the applicant is a man aged 18-64 inclusive, or a woman aged 18-59 inclusive unless he or she, or the employment, is excepted from the provisions of the Notification of Vacancies Order, 1952.

OLD Established Engineering Co. in East Lancs. area require a GENERAL MECHANICAL ENGINEER, DRAUGHTSMAN for the design of Railway Track Maintenance Machinery, knowledge of Rolling Stock Equipment preferred. Must have H.N.C. Good Salary, Canteen facilities. Apply in first instance in writing to CLAYTON GODFELLOW & CO. LTD., Atlas Iron Works, Blackburn, Lancs.

BOUNDED VOLUMES.—We can arrange for readers' copies to be bound in full cloth at a charge of 25s. per volume, post free. Send your copies to the SUBSCRIPTION DEPARTMENT, Tothill Press Limited, 33, Tothill Street, London, S.W.1.

to purchase the track and accessories of the Fourth Concession, and the Decree to legalise the contract has been promulgated. Agreement has also been reached for the purchase by the State Railways of the remaining effects of the Fourth Concession and of certain locomotives and rolling stock, but the processes of issuing the necessary decrees have not yet been completed. Questions have arisen in respect of stores, stocks, and equipment of the main workshops in Iquique which have delayed the legal formalities of transfer of these assets to the State Railways. There are also questions still outstanding as to the extent of the company's liabilities to the Chilean Government. No funds have so far been received from the Chilean Government in respect of any of those items of property on which agreement has been reached.

Silentbloc Limited.—The final dividend for the year ended March 31 has been fixed at 2½d. per 2s. share, making a total distribution of 5d., as against 6d. for the previous year. Group net profits, after taxation amounting to £103,946, were £60,051 compared with £72,582 for the previous year. £20,000 was allotted to reserve, £36,953 to dividends and £43,106 was brought forward.

Rolls-Royce Exhibits at Olympia.—Three examples of the application of the company's C.6, four-stroke cycle, direct injection oil engine comprising a generating set, a power pack, and marine engine are exhibited by Rolls-Royce Limited at the Engineering & Marine Exhibition which is being held at Olympia, September 3-17. The generating set is self-contained and skid-mounted, and is supplied with a normally aspirated C.6 N.F.L. engine set to develop 130 b.h.p. at 1,500 r.p.m. The engine is coupled by means of a special steel plate coupling to a Macfarlane generator, flange-mounted to the engine flywheel. The power pack, a supercharged C.6 cast-iron engine, for public works or all-field application, delivers 190 b.h.p. at 1,800 r.p.m., while the supercharged marine unit has a maximum horsepower of 250 b.h.p. at 2,100 r.p.m. It can be supplied with ahead and astern direct drive or reduction gearbox, and incorporates fresh water cooling, heat exchanger, and water-cooled exhaust manifold.

Crompton Parkinson Limited Stud Welding Organisation.—A new stud welding organisation has been formed recently to operate as a separate entity within the Crompton Parkinson group of companies.

THE PERUVIAN CORPORATION have the following vacancies on the railways in Peru:—Central Railway. TRAFFIC LEARNER. Single. Between 21 and 25 years of age. Good general education, with transportation experience either practical or theoretical. ASSISTANT ENGINEER (CIVIL) for Railway Drawing Office duties including Bridge and General Structural Steel Work Design, also Reinforced Concrete Structures. Must have sound technical training, preferably with previous railway experience. Age 30/35. A knowledge of the Spanish Language is preferable in both these appointments or willingness to learn within 6 months. Apply: SECRETARY, 144, Leadenhall Street, London, E.C.3.

THE High Commissioner for India invites tenders for the supply of: Wheels and Axles for Indian Railways. Quantity: 440 Pairs. Forms of tender may be obtained from the Director-General, INDIA STORE DEPARTMENT, 32-44, Edgware Road, London, W.2, at a fee of 10/-d. which is not returnable. Tenders are to be delivered not later than 2 p.m. on Friday, 16th October, 1953. Please quote reference No. 118/53 in your application.

RAILWAY MECHANICAL ENGINEER required by manufacturers of specialised equipment used in all types of motive power and rolling-stock. Training of approximately two years' duration would be given with a view to employment as sales engineer. Preference given to university graduate, under 30 years of age, who has served apprenticeship with a railway. Salary during training approximately £550, depending on qualifications.—Box 940, *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

INTERNATIONAL RAILWAY ASSOCIATIONS. Notes on the work of the various associations concerned with International traffic, principally on the European Continent. 2s. By post 2s. 2d. *The Railway Gazette*, 33, Tothill Street, London, S.W.1.

N.E.R. HISTORY.—Twenty-Five Years of the North Eastern Railway, 1898-1922. By R. Bell, C.B.E., Assistant General Manager, N.E.R. and L.N.E.R. Companies, 1922-1943. Full cloth. Cr. 8vo. 87 pages. 10s. 6d.—*The Railway Gazette*, 33, Tothill Street, London, S.W.1.

Its purpose is to co-ordinate the sales and engineering facilities for both Nelson and Cyc-Arc ranges of equipment with the object of providing a comprehensive service for users of stud welding equipment. The new organisation is the outcome of the latest extension of Crompton Parkinson's activities in the stud welding field, which began in 1948 when the Plant Division of the company became responsible for the Nelson stud welding service in this country, under licence from the Morton Gregory Corporation of Lorain, Ohio, U.S.A. Stud welding interests were extended by the company acquiring the Cyc-Arc assets in November 1952, thus assuming responsibility for the sales and servicing of the stud welding equipment of the original system developed and introduced by the British Cyc-Arc Company on the basis of experimental work started as long ago as 1918.

Protective Jackets for Tunnel Workers.—British Railways are introducing a standard type of donkey jacket made of white milled flannel for the use of staff working in tunnels where there are conditions of extreme cold, dampness, and draught. The new jackets, one of which

is shown in the accompanying illustration, will provide dual protection for tunnel workers. Milled flannel is the most satisfactory material to withstand damp, while the white colour makes the men working in the dark easily visible.

Wagon Repairs Limited.—The Consolidated net profit of Wagon Repairs Limited, after tax, rose from £118,592 to £162,454 for the year to March 31, 1953. Taxation was £388,319, against £415,067 a year ago. The parent company's net profit is £155,490, compared with £106,882. Subject to consent of the Capital Issues Committee the directors propose a scrip issue in the proportion of one-for-three. A second interim dividend of 10 per cent, made a total of 20 per cent, less tax, as before, on the £529,008 ordinary. A proposal to distribute 2d. per 5s. ordinary unit, free of tax, has also been made known. After allocating £75,000 (£50,000) to reserves, the carry-forward is £100,893 (£90,709, including £17,637 provisions written back). The ordinary units stand at 12s. 6d.

Glacier Metal Co. Ltd.—The report of the Glacier Metal Co. Ltd. for the year ended February 28 last reflects the changed trading conditions that began in the autumn of 1952 with a net profit of £270,649 (before taxation) comparing with £492,176 for the previous year. A slackening in demand for the company's products coincided with the middle of a programme of re-equipment and expansion, but while the current trend has not yet ended, the board feels that on a long term view its plans are fully justified. Manufacture and marketing of three new types of bearings which the company has developed and tested will begin in the current year. Illustrations of the company's activities in the report show machine tools, marine engines, electric generating plant, compressors, and diesel engines with glacier bearings.

Crompton Batteries.—From September 1953, traction, commercial and car starter batteries manufactured by Crompton Parkinson Limited will be marketed under the brand name Crompton, thus superseding the name Young which has been used for over 25 years since the Young Accumulator Co. Ltd., began manufacturing in 1927. From the time that Young Accumulator Co. Ltd., became part of the C.P. group in 1941, there has been continuous development in battery design and construction, made possible by the research facilities of the organisation. Simultaneously with the change of name, the new Crompton car starter battery is



New standard donkey jacket of white milled flannel for British Railways tunnel workers

being introduced designed to give greater power and longer life. A new design of grid made from Nilerode alloy retains active material more securely, stays rigid and resists corrosion. In order to realise the longer life obtainable from the new plate, Crompton car batteries now incorporate Dri-Stor microporous separators which are virtually indestructible and completely unaffected by immersion in acid. Every container is made of moulded hard rubber capable of withstanding rough handling and continual vibration without cracking and resultant leakage. This new battery is given a two-year guarantee from the date of installation.

Civil Defence School at Earlestown, L.M.R.—A new civil defence school for railwaymen in the Earlestown area is to be opened on September 14 in the Railway Institute, at British Railways (London Midland Region) Earlestown Carriage & Wagon Works. There will be two-day courses each of 25 students, on Monday-Tuesday and Wednesday-Thursday of each week, 9.30 a.m.—4.30 p.m. Instruction will be given by specially trained B.T.C. instructors. Besides Earlestown, civil defence courses already have been held in the London Midland Region at Watford, Birmingham, Liverpool, and St. Pancras; and a coach converted into a mobile school moves from depot to depot for instruction of repair gangs.

Aldershot & District Traction Co. Ltd.—A final dividend for the year ended May 31 last of 7½ per cent, is recommended on the capital doubled to £500,000 by an issue of fully paid shares. With the interim dividend of 5 per cent already paid on the old capital this makes an equivalent distribution of 10 per cent for the year on the increased capital. For 1951-52 an interim of 5 per cent and a final of 15 per cent were paid on the old capital being equivalent to a total distribution of 10 per cent on the present capital. Subject to audit, net profits for the past year amounted to £25,993 (£48,649 for 1951-52) after setting aside £31,784 (£9,142) for taxation. £13,019 (£45,000) is transferred to general reserve, leaving a balance forward of £117,459 (£131,673).

Forthcoming Meetings

September 5 (Sat.)—Permanent Way Institution, Newcastle Section. Joint visit by launch along the River Tyne with the Edinburgh and the Lancaster, Barrow and Carlisle Sections.

September 5 (Sat.)—Transportation Centre, R.E., Longmoor Camp, Liss, Hants. Longmoor Public Day, 1.30 to 7 p.m.

September 6 (Sun.)—Railway Correspondence & Travel Society, East Anglian Special tour, leaving Bishopsgate Goods at 11.15 a.m.

September 6 (Sun.)—The Stephenson Locomotive Society (North Western Area) and the Manchester Locomotive Society. West Riding Rail Tour, leaving Leeds City at 11.50 a.m.

September 8 (Tue.)—Permanent Way Institution, Leeds & Bradford Section, in the British Railways Social & Recreational Club, Ellis Courts, Leeds City North Station, at 7 p.m. Paper on "The Maintenance of Switches & Crossings," by Mr. D. P. Adams, of Sandiacre, illustrated by lantern slides.

September 11 (Fri.)—The Railway Club, at 57, Fetter Lane, London, E.C.4, at 7 p.m. Paper on "The Railways of Worcester," by Mr. J. E. Norris.

September 12 (Sat.)—Permanent Way Institution. Joint meeting between members of the London and Birmingham Sections will visit Lillie Bridge Works, London Transport Executive, at 2.30 p.m.

September 12 (Sat.)—British Railways Southern Region Lecture & Debating Society. Visit to Southampton Docks. Party will leave Waterloo at approximately 8.30 a.m., arriving back at about 8.30 p.m.

September 12 (Sat.)—Railway Students' Association, London School of Economics & Political Science. River Thames Cruise, leaving Tower Pier at 2.30 p.m.

September 12 (Sat.)—Permanent Way Institution, East Anglia Section, at Ipswich at 2.15 p.m. Paper on "New Bridges for Old," by Mr.

W. H. Weston, Western Region, British Railways.

September 18 (Fri.)—Institute of Traffic Administration, Merseyside Centre, at the Stock Hotel, Queens Square, Liverpool, at 7.30 p.m. Paper on "Airliner Management, Passenger and Freight Handling," by a representative of the British European Airways.

September 23 (Wed.)—Institution of Locomotive Engineers, at the Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, at 5.30 p.m. Presidential address.

September 23 (Wed.)—East Indian Railway Officers' Association, at the Connaught Rooms, Great Queen Street, Kingsway, London, W.C.2, at 6.30 p.m. for 7 p.m. Fifty-first Annual Dinner.

September 24 (Thu.)—East Indian Railway Officers' Association, at St. Ermins Hotel, Caxton Street, London, S.W.1. Reunion Tea Party for members, their wives, and families.

Railway Stock Market

Business in stock markets has been on a slightly larger scale, though industrials were irregular. Recent selling was followed by renewed demand but this was selective in character. The tendency is for caution to prevail, because should the reaction on Wall Street continue, it could much affect sentiment in this country. Because of the more cautious feeling in the City there has been a disposition to favour British Funds on safety first grounds. Much of the buying of gilt-edged has been by small investors, but institutional demand has also increased. A point which is attracting more attention in the City is that British Funds may offer an attractive means of switching into the steel shares when the latter are issued. Gilt-edged, except the short-dated stocks, can be exchanged into steel shares at prices to be fixed when the various steel issues are made.

Foreign rails have been rather more active with main attention centred on United of Havana stocks in anticipation of fuller details of Cuban Government plans. Reflecting the prevailing view that in any case takeover terms should make the various stocks worth more than their current market prices, the "A" stock has strengthened to 73 at the time of going to press, the "B" stock to 72, the second income stock to 24½ and the consolidated stock to 3½.

There has been a demand for Antofagasta preference stock, which rallied to 46. The 5 per cent debentures changed hands up to 70 and the ordinary stock has been firmer at 9.

Costa Rica ordinary stock has changed hands a 9½, the 6½ per cent first debentures at 65 and the 6½ per cent second debentures up to 54. Paraguay Central 6 per cent debentures marked 17, and Chilean Northern first debentures 25. Nitrate Rail shares eased to 20s. 6d. and Taltal shares were 14s. 6d.

Rather less interest was displayed in Dorada ordinary stock, which, however, changed hands up to 59. In other directions, Nyasaland Railways 3½ per cent debentures marked 74½.

There was again a little speculative buying of Russian railway bonds. Russian South-Eastern changing hands at 20s.

Canadian Pacifics at \$43½ were lower with the general tendency in dollar stocks,

but the 4 per cent preference stock has been firm at £67½ and the 4 per cent debentures £85½. Algoma Central 5 per cent first debentures changed hands around \$252. White Pass no par value shares reduced further to \$25; the convertible debentures fell to £90½.

Manila Railway "A" debentures have been firmer at £77 with the preference shares 7s. 9d. Guayaquil & Quito 5 per cent debentures were dealt in around 37½.

Great Northern Railway (Ireland) 4 per cent guaranteed marked 61 and Metropolitan Assented around 44½.

Firmness has again been displayed by road transport shares, with West Riding 34s. 6d., Southdown 32s., Lancashire Transport 51s. and Trent Motor Traction 31s. 3d. Ribble Motor Services were 37s. 6d., Rhondda Transport 26s. 3d. and Northern General 28s. 9d., while Aldershot & District were 31s. 3d. B.E.T. deferred 5s. units changed hands actively around 29s.

Though firmer, engineering and kindred shares again showed a tendency to await the first of the big steel issues which may have an important bearing on the trend in this section of markets. If steel shares were issued at prices showing yields of over 7 per cent, there might be a good deal of selling of leading engineering shares to exchange into steel shares. The prevailing belief is that shares of the leading steel companies will not be issued at prices giving a yield of more than 6½ per cent. At the time of going to press Vickers have turned firmer at 49s., with Cammell Laird 5s. shares 11s. 3d. and Guest Keen 50s. 6d. T. W. Ward firmed up to 74s. 6d. and John Brown were steadier at 34s. 1½d. in front of the full results and chairman's annual statement. Tube Investments were 60s. 7½d. and Ruston & Hornsby rallied to 39s.

Among shares of locomotive builders and engineers, Beyer Peacock were 34s., Charles Roberts 5s. shares 16s. 4½d. and Hurst Nelson 41s. North British Locomotive were 12s. 9d. and Birmingham Carriage 28s. 4½d. Central Wagon 10s. shares changed hands around 16s. 10½d. and Vulcan Foundry were 20s. 7½d. and Gloucester Wagon 10s. shares 12s. 6d. Wagon Repairs 5s. shares changed hands around 13s. 6d.